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ABSTRACT

This report reviews and synthesizes the findings of a four year, two-phase study conducted by the Rand Corporation to examine and evaluate a national sample of educational innovations funded by Federal programs. Section I of this document provides background information and descriptions of the study. Section II discusses Rand's research approach and design. Section III presents a synthesis of the findings, regarding the effects of Federal change agent policies. Section IV describes the local process of change precipitated by the availability of Federal "seed money," focusing on the distinction between local patterns of innovative activity that were ineffective, and those that characterized effective and lasting change efforts. Section V examines characteristics of school projects, of school district settings, and of Federal influences as these affected innovation. Section VI goes beyond the quantitative and qualitative analysis to consider basic questions about Federal change agent policy and the government's role in educational reform. (Author/EB)

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FEDERAL PROGRAMS SUPPORTING EDUCATIONAL CHANGE, VOL. VIII: IMPLEMENTING AND SUSTAINING INNOVATIONS

PREPARED FOR THE U.S. OFFICE OF EDUCATION
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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PREFACE

The Rand Corporation conducted, under the sponsorship of the U.S. Office of Education, a several-year, two-phase study of federally funded programs designed to introduce and spread innovative practices in public schools. These change agent programs normally offer temporary federal funding to school districts as "seed money." If an innovation is successful, it is assumed that the district will incorporate and spread part or all of the project using other sources of funds. The Rand study analyzed the effects that these federal policies had on local change processes.

The first phase of the research (July 1973 to April 1975) examined four federal change agent programs (Elementary and Secondary Education Act Title III, Innovative Projects; Elementary and Secondary Education Act Title VII, Bilingual Projects; Vocational Education Act, 1968 Amendments, Part D, Exemplary Programs; and the Right-to-Read Program) and addressed issues related to the initiation and implementation of these change projects. Specifically, this aspect of the study identified what kinds of strategies and conditions tend to promote change in the school and what kinds do not.

The final phase of the research (May 1975 to April 1977) examined what happens to local projects in the two largest change agent programs—ESEA Title III and ESEA Title VII—when federal funding stops. This phase focused on the different forms that local incorporation or continuation may take, and analyzed the institutional and project factors that promote or deter the sustaining of Title III and Title VII projects.

The findings of the study are reported in eight volumes under the general title *Federal Programs Supporting Educational Change* (R-1589-HEW). A series of five reports describes the results of the first phase of the research:

Volume I (R-1589/1-HEW, *A Model of Educational Change*) provides a theoretical perspective for the Rand study by analyzing the current state of knowledge of planned change in education and by proposing a conceptual model of factors affecting change processes within school districts.

Volume II (R-1589/2-HEW, *Factors Affecting Change Agent Projects*) contains an analysis of survey data collected from a national sample of 293 projects in 18 states during November and December 1973.

Volume III (R-1589/3-HEW, *The Process of Change*) summarizes the findings and policy implications resulting from 29 case studies of change agent projects conducted by Rand staff members and consultants in 25 school districts during April and May 1974. These case studies were chosen from the original sample of 293 projects initially surveyed. Volume III also describes the role of state education agencies in selecting, managing, and disseminating the change agent projects.

Four technical appendixes to Vol. III describe in detail the federal program management approach, state education agency participation, and case studies for each of the programs in the study: Title III, App. A; Reading, App. B; Bilingual Education, App. C; and Career Education, App. D. Appendix A should be of particular interest to researchers or practitioners concerned with the introduction of new approaches to classroom instruction.

Volume IV (R-1589/4-HEW, *The Findings in Review*) summarizes the findings

of Vols. I, II, and III, and also synthesizes extensive data collected by Rand on federal-level program strategy and management for each of the change agent programs. Volume IV also includes a discussion of alternative federal strategies for promoting innovation.

Volume V (R-1589/5-HEW, *Executive Summary*) summarizes the first phase of the research for a general audience.

The results of the final phase are reported in three volumes:

Volume VI (R-1589/6-HEW, *Implementing and Sustaining Title VII Bilingual Projects*) discusses the complex process of establishing bilingual programs in local school districts, with particular attention given to those aspects of the Title VII program and to those political influences that affect local implementation. The fieldwork, viewpoint, and data interpretation build on the extensive empirical work done in the first phase of the study and reported in Vol. III, App. C (*Innovations in Bilingual Education*, R-1589/3-HEW).

Volume VII (R-1589/7-HEW, *Factors Affecting Implementation and Continuation*) presents an analysis of the survey data collected in 100 Title III projects in 20 states. This volume deals specifically with the questions of implementing and sustaining part or all of special project strategies after federal support ends.

The present report, Vol. VIII, summarizes the findings from both phases of the study and, drawing on these results, describes the process of change at the local level—initiating, implementing, and sustaining innovative projects. The last section discusses implications for federal policy.

SUMMARY

BACKGROUND

Federal financial aid now makes up an important fraction of many local school district budgets, but its effectiveness in improving local educational practices is uncertain. Federally sponsored evaluations reveal inconsistent and generally disappointing results, and, despite considerable innovative activity on the part of local school districts, the evidence suggests that:

- No class of existing educational treatments has been found that consistently leads to improved student outcomes (when variations in the institutional setting and nonschool factors are taken into account).
- "Successful" projects have difficulty sustaining their success over a number of years.
- "Successful" projects are not disseminated automatically or easily, and their "replication" in new sites usually falls short of their performance in the original sites.

Consequently, although federal support for local school services has become well established, the "decade of reform" that began with ESEA has not fulfilled its expectations, and questions continue to be raised about what might be the most appropriate and effective federal role in improving the public schools.

To aid in reexamining federal education policies, the U.S. Office of Education awarded a contract to The Rand Corporation to study a national sample of educational innovations funded by federal programs. The study aimed to help improve federal change agent policies by describing how the process of innovation works in its local setting, and by trying to discern what factors affect the innovative process and its outcomes. This report reviews the findings of Rand's research.

STUDY DESIGN

Rand conducted a four-year, two-phase study. The first phase (July 1973 to July 1975) studied local innovations during their last or next to last year of funding by federal change agent programs and the research focused on the initiation and implementation of these local projects. Four federal programs were identified by USOE to be included in Phase I of the study: Elementary and Secondary Education Act Title III (now a part of Title IV-C), Innovative Projects; Elementary and Secondary Education Act Title VII, Bilingual Projects; Vocational Educational Act, 1968 Amendments, Part D, Exemplary Programs; and Right-to-Read. These change agent programs had a common purpose: the stimulation and

spread of educational innovations. They also had a common policy instrument: the provision of temporary funds (3 to 5 years) which, although small relative to the budget of a school district (ranging from grants of $10,000 or less to several hundred thousand dollars per year), were intended to fund new educational services, not to support existing practice. A sample of 293 local projects funded by these four federal programs was drawn from 18 states. Field studies were conduct-

ed at 29 projects, and 1735 personal interviews were conducted with staff at all levels in the school districts for all 293 projects.

Phase II of the study (August 1975 to April 1977) examined what happened to innovative projects after the end of the federal funding period (of 3 to 5 years). Accordingly, two years after the initial field research, Rand restudied a sample of approximately 100 of the projects, originally funded under Title III of ESEA. Fieldwork was conducted in 18 school districts, and 1343 district staff were surveyed in 100 sites. By thus studying local innovations one to two years after the end of federal funding, we were able to explore the longer-run effects of the federal policy of providing "seed money" as a means to promote educational improvement.

This research was exploratory. Consequently, the analysis is subject to methodological reservations, and the conclusions are open to rival interpretations. These caveats notwithstanding, we believe the research sheds light on how innovation works and on the factors affecting educational change.

Findings About the Effects of Federal Programs

We examined two questions relevant to the effects of the federal programs:

- How did the "seed money" policy common to the change agent programs affect local projects?
- Were the differences in guidelines and objectives among the federal programs reflected in their projects' implementation and continuation?

We found that federal change agent policies had a major effect in stimulating local education agencies to undertake projects that were generally consistent with federal categorical guidelines. This local response resulted from the availability of federal funds and, in some programs, from guidelines that encouraged specific educational practices.

But the adoption of projects did not insure successful implementation; moreover, successful implementation did not guarantee long-run continuation. Neither those policies unique to each federal program nor those policies common to them strongly influenced the fate of adopted innovations. The net return to the federal investment was the adoption of many innovations, the successful implementation of few, and the long-run continuation of still fewer (with the exception of the special case of bilingual projects, where federal and state funding continues to be available).

All the federal programs had funded some successfully implemented projects as well as dismal failures and many projects in between. The difference between success and failure depended primarily on how school districts implemented their projects, not on the type of federal sponsorship. The guidelines and management strategies of the federal change agent programs were simply overshadowed by local concerns and characteristics.

Similarly, "more" money supplied by federal funds did not necessarily purchase those things that mattered; it did not "buy," for example, more committed teachers, more effective project directors, more concerned principals, and so on. In other words, project outcomes reflected not the amount of funds available, but the quality and behavior of the local staff.

This is not to say that "federal money doesn't matter." Federal seed money

allowed some districts to undertake activities that their staff were anxious to pursue but that could not be supported out of district funds. Moreover, federal funding has bestowed legitimacy on local projects and given them the aura of "special status," which can provide some measure of "protection" for politically controversial or pedagogically untested educational practices.

Yet few districts in our sample planned for the long-term stability of projects. The end of federal funding generally resulted in a reduction of resources, particularly expensive ones. Many districts complained of insufficient resources to carry on project activities, although the financial requirements for project continuation could have been foreseen and planned for from a project's inception. Instead, budget and personnel decisions typically perpetuated the "special project" status of innovations, thereby leaving them particularly vulnerable to the financial and political fortunes of the district.

While the overall effects of federal policy may be disappointing, the positive results should not be overlooked. Some local projects worked well, and from these successes, we can identify factors that determine the fate of innovations.

Factors Affecting Implementation and Continuation

In addition to analyzing the effects of federal policies, we examined how characteristics of projects and school districts affect the outcomes of innovations. We studied the projects' educational method, resource levels, scope, and implementation strategies; the district characteristics we analyzed were school climate and leadership, teacher attributes, and district management capacity and support. We found:

1. *Educational methods.* A project's methods determined its implementation, effect, and continuation to only a small and limited extent. This is so because projects with essentially the same educational methods can be, and usually are, implemented very differently and thus with varying effectiveness. In short, what the project *was* mattered less than how it was done.

2. *Project resources.* More expensive projects were generally no more likely than less expensive ones to be effectively implemented, elicit teacher change, improve student performance, or be continued by teachers. Nor did variations in the number of project schools per district or in the funding per student strongly affect project outcomes in most cases.

3. *Scope of project.* Ambitious and demanding innovations promoted teacher change and teacher continuation of project methods without necessarily causing unmanageable implementation problems or diminishing gains in student performance. Teachers must clearly understand their project's goals and percepts; such clarity comes during implementation. We doubt whether projects aiming at significant change can be effectively implemented across a whole school system at once.

4. *Implementation strategies.* Implementation strategies are the local decisions and choices, explicit or implicit, on how to put the innovation into practice. We found that these strategies could spell the difference between success or failure, almost independently of the type of innovation or educational method involved; moreover, they could determine whether teachers would assimilate and continue using project methods or allow them to fall into disuse. The following strategies were frequently *ineffective* because they were not consonant with the conditions of school district life or with the dominant motivations and needs of teachers:

- Outside consultants.
- Packaged management approaches.
- One-shot, preimplementation training.
- Pay for training.
- Formal evaluation.
- Comprehensive projects.

Effective strategies promoted *mutual adaptation*, the process by which the project is adapted to the reality of its institutional setting, while at the same time teachers and school officials adapt their practices in response to the project. Effective strategies provide each teacher with necessary and timely feedback, allow project-level choices to be made to correct errors, and encourage commitment to the project. The following were effective strategies, particularly when applied in concert:

- Concrete, teacher-specific, and extended training.
- Classroom assistance from project or district staff.
- Teacher observation of similar projects in other classrooms, schools, or districts.
- Regular project meetings that focused on practical problems.
- Teacher participation in project decisions.
- Local materials development.
- Principal participation in training.

5. *School organizational climate and leadership.* Three elements of a school's organizational climate powerfully affected the project's implementation and continuation—the quality of working relationships among teachers, the active support of principals, and the effectiveness of project directors. The importance of the principal to both short- and long-run effects of innovations can hardly be overstated. The principal's unique contribution to implementation lies not in "how to do it" advice better offered by project directors, but in giving moral support to the staff and in creating an organizational climate that gives the project "legitimacy." The principal's support was also crucial for continuation. Teachers were unlikely to continue a full array of project methods without the sanction of their principal, even if the methods were successful and had been assimilated. Moreover, after the end of federal funding, many districts took a laissez-faire attitude of letting the principals decide the fate of the project within their schools. Unless principals actively promoted the project, particularly in regard to seeking district financial support and replacing staff that moved elsewhere, even "successful" projects could wither away. All told, the principal amply merits the title of "gatekeeper of change."

6. *Characteristics of schools and attributes of teachers.* Change was typically harder to obtain and continue at the secondary level. Three teacher attributes—years of teaching, sense of efficacy, and verbal ability—significantly affected project outcomes. The number of years of teaching had *negative* effects: the longer a teacher had taught the less likely was the project to achieve its goals, and the less likely was the project to improve student performance. Furthermore, teachers with many years on the job were less likely to change their own practices and less likely to continue using project methods after the end of federal funding. The teacher's sense of efficacy—a belief that the teacher can help even the most difficult or unmotivated students—showed strong positive effects on all outcomes, whereas

teachers' verbal ability had a positive correlation only with improved student achievement.

7. *District management capacity and support.* Districts differ sharply in their capacity to manage change agent projects and in their receptivity toward them. Though we could not measure these factors with precision, our observation and interview data leave little doubt as to the importance of constant and active support from LEA officials and specialized staff for the project's short-run outcomes and especially its long-run fate.

IMPLICATIONS FOR FEDERAL POLICY

Our research suggests that federal policy has often been based on misconceptions about the reality of school districts and the factors that produce change in their organizational and educational practices. Correct assumptions would not, of course, automatically improve policy effectiveness, because any policy may be poorly implemented. But faulty assumptions—indeed even *one* faulty assumption among otherwise good ones—can lead to ineffective and counterproductive programs. Federal policy to date has largely been based on a research and development point of view—that the federal government should develop new technologies, provide incentives for their adoption, and introduce these technologies into school districts by projects that were targeted, and thus accountable. In a very real sense, school districts were thought of as "black boxes." Federal "inputs" would be supplied to change and control district behavior so that a desirable educational "output" could be achieved. This R&D point of view was embodied in the following assumptions:

1. Improving educational performance requires innovative educational technologies.
2. Improving educational performance requires the provision of missing resources to school districts.
3. Improving educational performance requires a targeted project focus.

We believe that federal officials should set aside the largely ineffective R&D point of view. Instead, they might consider an approach that assumes school districts are ultimately responsible for improving their own performance but require both short- and long-run aid to achieve this end.

School districts need institutional assistance, but an institutional development strategy can work only if federal officials identify those aspects of the local change process and of district organizational characteristics where federal resources and influence can be effective. The following premises might provide building-blocks to formulate this point of view:

1. Educational performance could be improved if more attention were paid to all stages of the local change process.
2. Educational performance could be improved with adaptive implementation assistance.
3. Educational performance could be improved if the capacity of school districts to manage change were enhanced.

These premises, as well as more specific recommendations suggested in the report, direct attention to areas that federal policy has tended to neglect. For example, they suggest that local adoption of projects should not be the sole federal policy focus; that federal efforts to improve the change process within school districts should take precedence over their past concern with improving educational products; that federal evaluators should expect and encourage the adaptation of programs to suit local needs; that the federal government should promote local institutional development in addition to more targeted project approaches; and that federal legislation should establish ways to provide more differentiated and flexible support to school districts. In short, these premises suggest a shift in the federal role toward the process of educational change, which might well imply a strengthened role for state educational agencies. We believe that policy should reflect the assumption that state education agencies are potentially better suited than federal agencies to influence and provide opportune assistance to school districts.

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I. INTRODUCTION

In July 1973, the U.S. Office of Education (USOE) awarded a contract to The Rand Corporation to study a national sample of educational innovations funded by federal programs. The study aimed to help improve federal change agent policies by describing how the process of innovation works in its local setting, and by trying to discern what factors affect the innovative process and its outcomes. This report reviews the findings of Rand's research.[1]

BACKGROUND OF THE STUDY

During the 1950s and 1960s two important initiatives—the National Defense Education Act (NDEA) of 1958, and the Elementary and Secondary Education Act (ESEA) of 1965—defined a new federal role in local education. NDEA sought to stimulate curriculum development in subjects such as science that are directly related to the national interest. These efforts were pursued mainly through colleges and universities, not local school districts. ESEA initiated a much broader federal role, including large-scale federal support for special education for the disadvantaged and for bilingual education, encouragement of innovations in the public schools, and grants to strengthen state departments of education. ESEA also was intended to serve broad social and political goals, such as redistributing educational resources in the public school system and legitimizing the voice of parents and community groups in the governance of the public schools. ESEA, in short, signified an explicit federal interest in the improvement of the nation's public schools.

The federal government, particularly the United States Office of Education (USOE), has pursued a number of strategies to promote educational improvement. Cases in point are such programs as Title III of ESEA (Innovative Projects), the Experimental Schools Program,[2] Right-to-Read, Follow Through, and Title VII of ESEA (Bilingual Projects).

One consequence is that federal funds now make up an important fraction of many local school district budgets, but their effectiveness in improving local educational practices is uncertain. Federally sponsored evaluations reveal inconsistent and generally disappointing results.[3]

Despite considerable innovative activity on the part of local school districts, the evidence suggests that:

- No class of educational treatments has been found that consistently leads to improved student outcomes (when variations in the institutional setting and nonschool factors are taken into account).

[1] The study's findings are reported in the eight volumes described in the Preface. References to these volumes will be indicated simply by the appropriate volume number.

[2] Later transferred from USOE to the National Institute of Education.

[3] Volume I of this study reviews the evaluation and other relevant literature up to 1974. Large-scale evaluations are a continuing activity of the USOE and National Institute of Education. Recent evaluations seem as controversial and as mixed as their predecessors. On balance, however, they do not seem to contradict the generalizations made above.

- "Successful" projects have difficulty sustaining their success over a number of years.
- "Successful" projects are not disseminated automatically or easily, and their "replication" in new sites usually falls short of their performance in the original sites.

Consequently, although federal support for local school services has become well established, the "decade of reform" that began with ESEA has not fulfilled its expectations, and questions continue to be raised about what might be the most appropriate and effective federal role in efforts to improve the public schools.

To aid in reexamining and redirecting federal education policies, USOE awarded a contract to The Rand Corporation in 1973 to undertake a four-year study of innovative projects funded by specified federal change agent programs. This research was to assess the effectiveness of these programs as stimuli of change in local practices, and to suggest how federal policies could be improved. The study was not to be an evaluation *per se;* it was to concentrate on the basic processes that attend the local initiation and management of federally sponsored projects, and attempt to understand what factors systematically and significantly affect these processes.

STUDY DESIGN

Rand conducted a four-year, two-phase study. The first phase (July 1973 to July 1975) studied 293 local innovations during their last or next to last year of funding by federal change agent programs, focusing on the initiation and implementation of these local projects. Four federal programs were identified by USOE to be included in Phase I of the study: Elementary and Secondary Education Act Title III, Innovative Projects; Elementary and Secondary Education Act Title VII, Bilingual Projects; Vocational Education Act, 1968 Amendments, Part D, Exemplary Programs; and Right-to-Read.[4] Despite differences in focus and management strategy, these change agent programs had a common purpose: the stimulation and spread of educational innovations. They also had a common policy instrument: the provision of temporary funds (3 to 5 years) which, although small relative to the budget of a school district (ranging from grants of $10,000 or less to several hundred thousand dollars per year), were intended to fund new educational services, not to support existing practice. Because we studied four programs rather than one, we were able to compare the initiation and implementation of approximately three hundred projects funded by the different programs. Thus, we could examine, in a variety of different institutional settings, the local process of change that was initiated by several distinct federal programs, and we could identify, at least in a preliminary way, major factors affecting local project initiation and implementation.

Phase II of the study (August 1975 to April 1977) examined what happened to

[4] In FY 1974, the year of the major research activities of Phase I of this study, the approximate funding levels of the federal programs were: ESEA Title III, Innovative Projects, $150 million; ESEA Title VII, Bilingual Projects, $45 million; Vocational Education Act, 1968 Amendments, Part D, Exemplary Programs, $16 million; and Right-to-Read, $12 million. Because these programs have evolved since 1974 (e.g., Title III has become consolidated into Title IV under the 1974 Amendments to ESEA), the discussion in this report refers to the programs as they existed during the time the projects studied had federal funds.

innovative projects after the end of the federal funding period (of 3 to 5 years). Accordingly, two years after the initial field research, Rand restudied a sample of approximately 100 of the projects, originally funded under Title III of ESEA.[5] By thus studying local innovations one to two years after the end of federal funding, we were able to explore the longer-run effects of the federal policy of providing "seed money" as a means to promote educational improvement.

The research relied on quantitative and case study methods.[6] The quantitative analysis of both phases of the research was designed to be exploratory in nature. We did not aim to evaluate the success of specific federal programs or of particular change agent projects. Rather, we sought to identify underlying factors that affect the fate of a broad range of local educational innovations. Similarly, the field studies looked for fundamental patterns in the local innovative process, with the earlier studies focusing on the initiation and implementation of innovations and the later studies concentrating on a project's end or continuation. Taken together, the quantitative and qualitative analyses were intended to develop an understanding of how federal, state, or local policy might promote effective and stable educational reform.

CONTENTS OF THIS REPORT

This report reviews and synthesizes the findings from all components of Rand's study. Section II discusses our research approach and design. Section III presents a synthesis of our findings from Phases I and II about the effects of federal change agent policies. Section IV describes the local process of change precipitated by the availability of federal "seed money." We focus especially on distinguishing between local patterns of innovative activity that were ineffective, and patterns of activity that characterized effective and lasting change efforts. Section V examines three types of factors affecting innovations—characteristics of projects, of school district settings, and of federal influences. In particular, we review our findings about the relative importance of these various characteristics for the implementation and continuation of federally funded projects.

Section VI goes beyond the quantitative and qualitative analyses to consider basic questions about federal change agent policy and educational reform. We view this policy discussion as tentative for two reasons. First, the research has focused on the innovative process at the local level and examined how federal policies have affected this process. We have not analyzed the federal policy process *per se;* hence, rather than deal with specific recommendations, this report draws on our analysis of local school district behavior to suggest broad lessons for federal policy.

Second, this is exploratory research. School district behavior is too complex and social science theory is too limited to presume that any study could yield definitive answers or any policy provide complete solutions. Nonetheless, systematic patterns in the reality of local change can be discerned, though sometimes only vaguely. We regard this series of reports as a step toward making these patterns clearer.

[5] Rand did not study Right-to-Read or Vocational Education projects in Phase II but did examine Title VII, Bilingual Education projects. While 85 percent of the bilingual projects in our sample received additional federal grant money, and the question of project continuation thus became moot, USOE and Rand nevertheless considered it worthwhile to examine a small sample of Title VII projects because of the rapidly evolving nature of both the federal program and the local political-educational environment supporting bilingual education. See Vol. VI.

[6] Section II, below, presents a more detailed discussion of study methods.

II. RESEARCH APPROACH

The Rand study considered two basic issues: Why have change efforts failed to produce consistently successful innovations? Why have "successful" projects experienced difficulty sustaining their success over a number of years? Policymakers, educators, and laymen have offered many answers to these questions, reflecting different ways of thinking about innovations and educational effectiveness. We too came to the study with a point of view formed by our research experience and our analysis of the educational and social science literature about planned change. This point of view guided the research and provided its intellectual foundation. It is therefore appropriate to discuss our theoretical approach before going on to sketch the design of the research.

THEORETICAL FRAMEWORK

Successful Innovations and Implementation Effectiveness

In the late 1960s, educational reform was often cast as an "input-output" problem: The supply of the right amount and kind of inputs—money, innovative ideas, and technology—would enable school districts to change their educational practices and thus "produce" improved student outcomes. But by 1973, when this study began, serious doubts began to be raised. The evaluation evidence suggested that federal policy instruments had not yielded the expected improvements. Some experts interpreted these disappointing results as indicating that schools were already doing the best job they could (and that federal attention should therefore be directed at other social problems, such as unemployment or housing segregation). Others drew an opposite conclusion: More time, more money, better technology, and wider dissemination of promising practices were needed.

The Rand study diagnosed the problem a third way. We did not question the necessity of additional help for school districts, but we did question whether existing forms of federal intervention would be likely to produce real improvements. Clearly, local school districts each had to implement innovative practices in its own idiosyncratic way; yet our observations, reinforced by the testimony of practitioners, led us to conclude that implementation was a difficult and highly uncertain process. Thus, the disappointing outcomes of federal efforts might be more the consequence of the way school districts implemented innovations than the direct result of federal policies.

Rand's diagnosis—that implementation was crucial to the success of projects—had two research implications. First, we needed to probe deeper than a mere examination of the relationship of input to outcome; organizational processes and local choices *within* school districts had to be identified and understood. These "internal" factors might hold the key to more effective implementation and, hence, to more successful policies.[1]

[1] Volume I discusses the implementation approach more fully.

Second, project "outcomes" had to be defined in new ways. The use of student outcomes, the obvious candidate, raised serious measurement, comparability, and timing questions for the analysis of change agent projects. The scores of students on standardized achievement tests could not be used because the innovations in our sample differed too greatly in their objectives, educational treatment, and age level of students. Instead, to overcome the comparability problem, we asked project teachers to evaluate, on content-free scales, the improvement (or decline) of their students' achievement and behavior. However, we felt that any assessment of student outcomes made little sense during the first few years of implementation, when even successful projects experience disruptive, often chaotic, conditions. Consequently we did not ask teachers about student outcomes in the second or third year of project implementation (the time of our first survey) but did ask them in the project's fourth or fifth year (the time of our follow-up survey).[2]

Student outcomes do not, however, tell us all we need to know to assess what went wrong or right with innovations in either the short or long run. Instead of relying solely on student outcomes, we used a variety of indicators from the survey data to measure two other outcomes that define fruitful implementation—the project's relative success in achieving its goals (which we call the project's implementation effectiveness) and the extent and type of change in teacher style or behavior.

The effectiveness of implementation varied considerably for innovations in our sample. Some projects were judged as quite unsuccessful in achieving their objectives, often because of breakdowns during the first year of implementation. Others realized a high percentage of their goals, but we had to be careful not to make a spurious inference in these cases; some successful projects were effectively implemented because they aimed for little. To guard against a biased interpretation based on trivial projects, we also measured changes in teacher behavior, whether or not such change was anticipated by project designers. Many analysts, ourselves included, believe that improved student outcomes cannot be attained in the long run without teacher change; accordingly, we considered teacher change to be a critical project outcome in its own right. We also analyzed the relationship between teacher change and the reported effectiveness of project implementation. More important, we identified factors that promoted either effective implementation or teacher change or both.

In summary, we assumed that understanding why reform efforts have not consistently produced successful innovations required an analysis of how innovations are implemented and what factors either from outside or from within school districts affect implementation. We defined outcomes in addition to improved student performance that would be relevant to the analysis of implementation—namely, the project's implementation effectiveness (i.e., the relative success in achieving project goals) and the type and extent of teacher change precipitated by the innovation.

Continuation and Institutionalized Change

Our second concern was the period "after" implementation, when federal fund-

[2] The study used measures based on assessments made by teachers and other project participants. Such self-assessment measures are subject to bias and incomparability across respondents. Volumes II and VII discuss both the measurements and their limitations.

ing ends. The literature on educational innovation largely ignores the problem of continuing a successful innovation, despite evidence that such continuation is rare. In fact, federal and local policymakers alike often appear to assume that successful projects are self-sustaining. Rand's research started from the premise that even when federal seed money leads to effectively implemented projects, they do not automatically "take root."

We view "continuation" as a complex phenomenon that cannot be accurately assessed merely by tallying district decisions to continue or drop projects. Such an approach would be misleading for a number of reasons. For one, projects may not be continued precisely as they were implemented during their period of special funding. District officials can choose among a variety of options: Some may decide to expand project operations, others to reduce or eliminate some project components, still others to reallocate personnel and streamline procedures, and so on.

Similarly, depending on what they learn from a project, teachers often modify their classroom activities in idiosyncratic ways as they continue using various aspects of project methods or materials. Consequently, even when the level or scope of a project remains approximately the same, the substance of project-related activities can be modified after federal funding ends, to reflect the preferences and priorities of individual staff as well as the fiscal realities of the district.

Because the "continued" components of a project may differ significantly from the shape they took when the innovation was originally adopted, it is best to think of continuation not as a formal project structure, but in terms of the persistence of project-related changes. In short, we defined continuation in terms of the continuing *effect* of specially funded activities on classroom practices.

It is difficult, however, to assess the continuing effect of an innovation. One difficulty that confounds attempts to apply aggregate measures to project outcomes is the "loose coupling" of school district activities: A decision at one level in the system may or may not have a significant influence on behavior at another level. For example, a district may announce its official decision to continue a project, but the extent to which teachers continue to use project methods and materials may be only incidentally related to that decision. Conversely, the district may drop a project, but classroom teachers may elect to continue some of its features on their own without formal district sanction, or even knowledge. Similarly, a central office decision to continue project operations at selected schools may be effectively meaningless if teachers respond with mere *pro forma* compliance. An assessment of the extent of continuation therefore must encompass the decisions and actions of *both* the district and the classroom teachers.

At the classroom level, the crux of the matter is the extent to which teachers have *assimilated* project methods or materials into their regular classroom practice; unless this assimilation takes place, continuation will amount to no more than ritual. Yet classroom continuation by individual teachers is not enough to sustain project-related changes. It can be eroded by a host of conditions: Teachers leave, principals transfer, project directors move on, resources for project maintenance are cut or eliminated, school and district priorities shift, and so on. To prevent this erosion (as well as to allow for project evolution), the district must make decisions and design strategies to *incorporate* the project into such standard district operations as budget, personnel, instructional program, and facilities planning. When both classroom assimilation and district incorporation take place, the project has

indeed taken root; we then say that the project-related change has been *institutionalized.*

We were able to measure assimilation approximately two years after the end of federal funding by asking teachers how extensively they were using the project's methods or materials. (We partially validated their responses by questioning school and district officials and by observing a sample of projects in operation). Incorporation was more difficult to measure accurately. We were able, however, to collect data on district decisions to continue the projects, and on district strategies to implement their decisions; thus, we could judge how likely it was for project-related change to be institutionalized.

In summary, we assumed that understanding why even effectively implemented innovations may be short-lived required an analysis of (a) how districts institutionalize or fail to institutionalize change and (b) what factors within school systems affect continuation at the classroom and district level. We defined outcomes that would be relevant to the analysis of continuation—namely, continued teacher use of project methods and materials after the end of federal funding (i.e., assimilation) and the district continuation decisions and strategies (i.e., incorporation). Our research plan aimed: (1) to collect data on these continuation outcomes as well as on improved student performance, implementation effectiveness, and teacher change, (2) to collect data and analyze factors affecting project outcomes, and (3) to understand the processes of implementation and continuation. Before presenting the findings, a brief review of the research plan is in order.

RESEARCH PLAN

When we began this study, information about how school districts implement and sustain change consisted primarily of anecdotal evaluations or highly aggregated input-output analyses. Policymakers could not use such information because it was either too particularistic or too abstract. Consequently, we designed a research plan that covered a wide variety of innovations in many different school district settings, but also allowed us to probe beneath the surface and gather detailed data about how change agent projects actually worked in classrooms, schools, and districts.

To obtain a balance between the requirement of generalizability and the need for an in-depth understanding of the innovative process, we used a combination of survey techniques and field case studies. Phase I of the study focused on project initiation and implementation, and surveyed 293 projects (in 18 states) during their last or next to last year of funding by one of four federal programs; 29 of those projects were visited by Rand staff. Personnel at all levels of school district and project operation were interviewed in both survey and fieldwork. The Phase I survey, which the National Opinion Research Corporation administered, collected information from 194 superintendents, 191 federal program managers, 293 project directors, 368 principals, and 689 teachers. The fieldwork also afforded the opportunity to observe projects in operation and to see whether the reality in the classroom matched the answers given to our questionnaires.[3] Phase II focused on continua-

[3] Volume II discusses the sampling and surveying operations for Phase I; Volume III reviews the Phase I fieldwork methods; and Volume VII treats the Phase II survey and fieldwork procedures.

tion (i.e., what happens to projects after the end of federal funding); 100 Title III projects were resurveyed and 18 revisited two years after the initial research, which was between one and two years after the close of the federal grant. The Phase II survey, which Response Analysis Corporation administered, collected information from 100 superintendents or district officials, 171 principals, and 1072 teachers. In addition, bilingual projects funded by Title VII were visited to gain an appreciation of the special problems involved in implementing and sustaining bilingual innovations.[4]

The sample of projects was not statistically representative of all federally funded change agent projects, but included a wide array of innovations: Street Academies, computer assisted instruction techniques, multi-age grouping in elementary schools, field trips to the zoo, program-planning-budgeting systems, staff development and training activities, curriculum projects in reading, mathematics, environmental studies, etc. The projects ranged from the ambitious (e.g., open education projects or high schools without walls) to the commonplace (e.g., the addition of dropout prevention or career awareness material to the standard curriculum); they spanned the comprehensive (e.g., a reading program encompassing both elementary and secondary for all schools in a district) as well as the intensive (e.g., one grade in one school).

All this variation was not accidental. We aimed to understand the innovative process and to identify factors crucial to its outcomes. The underlying innovative process can be discerned only by exploring different types of innovations in different settings. Thus, we had to compare many different situations in order to separate factors that consistently affect the process from the idiosyncratic occurrences peculiar to a project, a classroom, a school, or a district.

We consider the study to be exploratory. Because of the lack of theory about school district behavior and about the local process of change, our research aim was to formulate hypotheses, rather than to test them. Our operational measurements of both independent and dependent variables can be challenged, as can virtually all measurements of educational "input" and outcome; the selectivity of our sample raises questions about the generalizability of the findings; and the statistical procedures and the interpretation of the results are open to valid criticism and alternative interpretations. These caveats notwithstanding, the findings provide working hypotheses for federal, state, and local policy.

[4] See Vol. VI.

III. THE EFFECTS OF FEDERAL CHANGE AGENT POLICIES

The four federal change agent programs studied by Rand provided seed money to school districts, but each had a distinct focus and management strategy. The largest of the programs, Title III, was designed to improve the quality of public education both by stimulating the development of innovative practices and by spreading existing exemplary practices to schools that are not aware of them. The competition for the three-year Title III grants was open to almost any kind of project that local schools wished to propose. In 1973-1974, the first year of the Rand study, 15 percent of Title III money was granted directly to local education agencies (LEAs) by the Office of Education; the remaining funds were allocated to state education agencies (SEAs) who in turn made grants to LEAs. The other federal change agent programs in our study were more narrowly targeted and had more specific funding criteria. Right-to-Read represented an attempt by the Office of Education to help make reading a national priority, particularly for disadvantaged students. The Right-to-Read demonstration projects, the program component addressed in Phase I of this study, included a prescribed planning and management strategy as a means of facilitating effective implementation. Vocational Education, Part D, was designed to create exemplary programs to enhance career awareness and readiness. Congress, believing that many SEAs were not able to promote significant innovations in career education, gave USOE the authority to fund local projects directly through the Part D program. Half of the Part D appropriations were allotted to the SEAs; the other half to USOE. Title VII (Bilingual Education) originally sought to provide model projects for the special needs of children whose English-speaking ability was limited. The program has subsequently also developed into an effort to maintain and encourage "cultural pluralism" in American public education, with strong political support from many people of Spanish-language origin.[1]

Rand did not evaluate these programs *per se;* we were concerned with the more general issues of stimulating, implementing, and sustaining planned change in local education. We wanted to determine, first of all, how the seed money policy common to the change agent programs affected local projects. Second, we wished to compare projects funded by each program to see whether differences between the programs' federal guidelines and objectives would be reflected in project implementation and continuation.

Our overall findings can be stated simply. Federal change agent policies had a major effect in stimulating LEAs to undertake projects that were generally consistent with federal categorical guidelines. This local response resulted from the availability of federal funds and, in some programs, from guidelines that encouraged specific educational practices. But the adoption of projects did not insure successful implementation; moreover, successful implementation did not guarantee long-run continuation. Neither those policies unique to each federal program nor those policies common to them strongly influenced the fate of adopted innovations. In

[1] Volume II describes these programs in greater detail.

sum, the net return to the federal investment was the adoption of many innovations, the successful implementation of few, and the long-run continuation of still fewer (with the exception of the special case of bilingual projects, where federal and state funding continues to be available).

Specifically, federal policies did not strongly influence project implementation. They did, however, have some noticeable effects that reflected the guidelines and management strategies of the different federal programs:

1. *State Title III* projects were locally designed and initiated through a competitive system of awards that seemed to encourage both ends of a spectrum of innovativeness—projects that aimed at serious change efforts and those that did not. The latter type, not surprisingly, produced nothing significant; the former resulted in some outstanding projects as well as many plagued by unclear goals, poor planning, and even poorer implementation. In other words, State Title III was a high-risk, high-payoff program.
2. *Federal Title III* projects were likely to be larger than those funded by state departments of education, and more likely to reflect the priorities of a district's central office than school level priorities. They tended, in short, to be "top-down" innovations with attendant difficulties, such as unclear techniques and little school-site commitment to the project, as reflected in complaints by teachers of being "overloaded."
3. *Vocational Education Act, Part D*, projects were relatively easy to implement because few of them sought real change. The school districts often treated them as grants-in-aid (the enabling legislation and agency guidelines did not require serious proposal development for the award of projects and thus few districts did so); teachers and administrators accomplished the little asked of them in a routine manner.
4. *Right-to-Read* demonstration projects featured prescribed management strategies and diagnostic/prescriptive approaches to reading achievement. These projects were plagued by implementation problems of teacher unfamiliarity with the materials (a common difficulty when materials are not locally developed, at least in part) and an inability to adapt the project's methods to unexpected events (a common problem for packaged approaches to educational change).
5. *Title VII* bilingual projects were consistently the most difficult to implement for reasons that probably reflected the novelty of the federal program and its ambitious goals. These projects, during the time of our Phase I research, suffered from inadequate bilingual materials, lack of qualified staff, teacher overload, and unrealistic goals and schedules. Some of these problems had eased by the time of our Phase II research, as the federal program matured and the bilingual movement became legitimized in many school districts.

Despite such findings, differences between the federal programs explained little of the difference in project outcomes. All the programs funded some projects that were implemented successfully, as well as some dismal failures and many projects in between. The difference between success and failure depended primarily on how school districts implemented their projects, not on the type of federal sponsorship. The guidelines and management strategies of the federal change agent programs were simply overshadowed by local concerns and characteristics.

The dominance of local factors is also illustrated by the ineffectiveness of a main

policy instrument of these seed money programs—namely, the size of the grant. The projects in our sample varied considerably in their level of funding, from ten thousand dollars to several hundred thousand dollars per year. The larger grants tended, not surprisingly, to be awarded to larger districts, to fund projects in a greater number of schools, or to fund projects that spent more money per student. The larger grants also tended to support educational methods that focused on individualization techniques. In this case, federal funds typically were used to hire the teacher aides necessary for individualizing classroom activities. By and large, however, more expensive projects were no more likely than less expensive ones to be implemented effectively or to lead to teacher change. More money did not necessarily purchase those things that mattered; it did not buy, for example, more committed teachers, more effective project directors, more concerned principals, and so on. In other words, project outcomes reflected not the amount of funds, but what the local staff did with them.

This is not to say that "federal money doesn't matter." Federal seed money allowed some districts to undertake activities that their staff were anxious to pursue but that could not be supported with district funds. For example, Title III funds have been used to expand or refine teacher-initiated pilot projects for more general use in district operations. Federal grants have also served as start-up funds for new teaching practices, many of which require substantial initial investment in materials or staff development. In short, many local projects would not have gotten off the ground without federal money. Federal funding has also bestowed legitimacy on local projects and given them the aura of "special status," which provided some measure of "protection" for politically controversial or pedagogically untested educational practices.

Yet, the record of the way school districts used federal grants is spotty. Many projects were started simply for the purpose of receiving federal largesse and, as far as we could tell, without any real intention to deal with central, or even not so central, local problems. The result of this behavior, which we call *opportunism*, was predictable: Opportunistic projects were poorly implemented and disappeared with the last federal check.[2]

Projects taken seriously by district officials and school staff generally avoided the nonimplementation typical of opportunistic projects. But even effective implementation did not always mean that the longer term federal objective of promoting stable change in local practices was achieved. At the end of federal funding, district officials usually had to make a decision concerning the continuation of a change agent project. This decision typically was not made primarily on the basis of the project's educational success during the period of special funding, as a seed money model assumes. Instead, organizational and political factors moderated and determined the district's commitment to continue change agent projects, even if the project had demonstrated its value.

[2] To avoid misunderstanding, we should clarify our meaning of "opportunism." We use this term to describe behavior whose *sole* purpose was to bring federal money into the district, regardless of federal intentions and usually regardless of the interests of the staff, or the educational needs of the district. This behavior not only wasted the federal investment, but also led to cynicism among district staff. We are not suggesting, however, that districts should refrain from actively taking advantage of opportunities to receive federal funds. They *should* seize opportunities, provided they have a serious educational objective in mind and are willing to take the necessary steps (suggested in Secs. IV and V) to attempt serious change. Many of the most successful projects in our sample used federal money in this way (which we call problem-solving).

Moreover, few districts in our sample planned for the long-term stability of projects. The end of federal funding generally resulted in a reduction of resources for most projects, particularly expensive ones. For example, innovations that had used "soft" money to reduce the student-to-adult ratio (e.g., by hiring aides) were cut back to live within the district budget. Many districts complained of insufficient resources to carry on project activities, or to permanently fund extra project staff. But financial difficulties usually involved questions of budget allocations that could have been foreseen and planned for from the project's inception. Instead, budget and personnel decisions typically perpetuated the "special project" status of innovations, thereby leaving them particularly vulnerable to the financial and political fortunes of the district.

Thus, few districts adequately prepared themselves for sustaining or spreading the changes resulting from even successfully implemented projects. This created an anomalous situation. Except for opportunistic or peripheral projects that essentially were not implemented, the methods or materials of most innovations in our sample were still being used to some extent by teachers two years after the end of federal funding; yet, in most cases, the project's continued use in the classroom was not matched by permanent changes in district procedures in budget, personnel, staff support, and instructional areas that would be required to maintain classroom practices. The prognosis for the continued existence of these projects (or what we call the project's *institutionalization*) was poor. In most cases, the innovations funded by federal seed money had not taken root.

In sum, our findings cast serious doubt on the efficacy of providing seed money to promote educational reform. It does stimulate school districts to adopt innovations. But it assures neither successful implementation nor long-run continuation, because these difficult and uncertain processes depend on the characteristics of school districts and the choices made by them. The prospects for more effective policy would seem to lie in understanding these local processes and the factors within and outside of the district that affect them. We turn to these matters next.

[9] This assessment of federal change agent policy may be disappointing, but we have told only part of the story. Each federal program had broad concerns related to, yet distinctly different from the strictly educational success and continuation of its projects. For example, many activists in federal agencies, Congress, and local communities viewed Title VII as a vehicle for establishing bilingual education as a significant priority in local, state, and federal planning. Title VII has successfully contributed to this goal, despite the serious difficulties of implementing specific bilingual innovations. Others must judge whether the other change agent programs have also fulfilled their broader, often implicit, agenda, for such assessments are beyond the scope of our research.

IV. THE LOCAL PROCESS OF INNOVATION

The Rand study set out to characterize *the process* by which an innovation is translated into an operating reality within school districts. We uncovered an interesting phenomenon. Rather than a single process, several different ones could be observed for different innovations and also for the same innovation at different times in its evolution. Although all change agent projects evidently encountered a similar sequence of events and activities, three characteristic phases could be discerned within the overall process. They were distinct in that specific district personnel typically played the central role in one phase but not necessarily in others, and different decisions characterized each phase. These phases roughly correspond to the project's beginning, middle, and end; but we do not use this simple terminology because neither beginning nor end makes sense in the context of a constantly evolving local educational system, as we shall discuss, and because instead of a chronological sequence "from beginning to end," the activities defining each phase overlapped one another. Instead, we call them *mobilization*, *implementation*, and *institutionalization* for reasons that will become apparent as we describe their features.

Within each phase, an innovation could follow different paths (i.e., processes) depending on local choices, concerns, and characteristics. These paths are of more than academic interest. Some paths typify projects with desirable outcomes—namely, effective implementation and long-term continuation—and other paths characterize ineffective or short-lived projects. It is, therefore, important to policy to describe these paths and to examine the conditions leading to them, which is the task of this section.

MOBILIZATION

Much has been written about the first "stage" of innovation (its adoption, initiation, etc.), but little is known about its empirical reality in a school district context. The literature, largely borrowed from theories of diffusion in agriculture and health care delivery, or from conceptions of planned change in industrial organizations or firms in market situations, often misconceives the process of planned change in education. For example, some conceptions suggest that awareness of innovation is a major factor in school district adoption of new practices; other theories focus on adoption as being a search for alternatives; still others indicate a rational process of experimentation and incorporation (sometimes described in terms of a Research and Development model) precipitated by the incentive of federal money. These descriptions, which focus on how and why districts select innovations, are generally inaccurate. Few school districts in our sample systematically "searched" for better educational treatments. Instead they used information or treatments that were either already known to local district personnel or were generally fashionable. Federal change agent funds did promote the adoption of projects that might not otherwise have been undertaken by districts; but these districts were not experimenting *per se* because the projects tended to be

ones which had already been tried or were peripheral add-ons. Above all, the process did not consist of a "rational" weighing of alternative educational treatments. Instead, it consisted of a complex interplay among organizational forces, political pressures, personal motivations, and educational concerns.

Thus, many change agent projects were undertaken for essentially *opportunistic* reasons—that is, for reasons fundamentally unrelated to the educational delivery needs of the districts. For example, local school officials may view the adoption of a change agent project primarily as an opportunity to garner extra, short-term resources. In this instance, the availability of federal funds rather than the possibility of change in educational practice motivates project adoption. Or, school managers may see change agent projects as a "low cost" way to cope with bureaucratic or political pressures. Innovation *qua* innovation often serves the purely bureaucratic objective of making the district appear up-to-date and progressive in the eyes of the community. Or a change agent project may function to mollify political pressures from groups in the community to "do something" about their special interests. Whatever the particular motivation underlying opportunistic adoption of a change agent project, the effective absence of serious educational concerns meant that the institutional interest and commitment necessary to genuine change were also missing.

Other districts proposed change agent projects with the expectation that the projects would address central educational needs of the district. Many projects so initiated represented expansion or refinement of educational strategies that the district had identified on a pilot or limited basis. Even in these cases, organizational, political, and personal considerations generally affected the deliberations of the school board and district officials about the kind of project to be proposed for federal funding.

We cannot offer any simple model of this selection process. For present purposes, however, it seems less important to know how projects are selected than to recognize two related points: (1) The motivations underlying initiation of a change agent project can have profound effects on the eventual outcomes of innovation, and (2) the activities preceding and following the selection or adoption decision can be more significant than the decision itself.

We think of these activities as falling into two broad categories. First, there are planning-related tasks such as problem-definition, goal-setting, proposal formulation, selection of sites and participants, and so on. In some cases, these activities begin with the announcement of a federal grant opportunity; more often, they are extensions of prior experiences in the district. We do not consider these activities to be complete until an operational plan to implement the project is worked out, which usually occurs after the award of the grant. We call this operational plan the "adopted project" to distinguish it from the original and often vaguely formulated proposal seeking a federal award.

Second, some activities serve to mobilize enthusiasm, commitment, dedication, or, in one word, *support* for the project among district staff. Planning and mobilization often go hand-in-hand in that the way planning is conducted determines the type of support generated for the project. In particular, the extent of participation in planning by teachers, principals, central office staff and, occasionally, parents and students greatly affected how much support was mobilized. Because the organizational units of school districts are only loosely related to one another, support in

the central office cannot be taken as support in schools and classrooms. Indeed, we found four patterns of support that depended on which components of the school districts were mobilized:

1. *Opportunism* represents the lack of effective support from *both* central office and the project staff. Adopted to respond to political demands, or to acquire essentially "soft" federal money with few strings, opportunistic projects were invariably ancillary to the district's main educational priorities; they fulfilled their purpose simply by virtue of their adoption. Planning for them was superficial and *pro forma*, and focused on issues of compliance, for example, rather than on expected problems of implementation.

2. *Top-down* support describes the situation in which the central office staff genuinely sought to improve educational practices but failed to mobilize the support of school staff. These projects often involved considerable planning, particularly in larger districts having a research and development unit. Yet they seldom evidenced more than *pro forma* user (teacher and principal) participation in the planning process. Consequently, top-down directives, even when issued with the best intentions, generally met with indifference or resistance at the school level.

3. *Localized support* developed because the enthusiasm and efforts of "grass roots" staff (usually in one school) were not matched at the central office level. Though a school might have planned quite extensively for these projects, districts paid little attention to them beyond routine assistance from the federal programs manager. Projects initiated in this manner represent isolated change efforts within the district.

4. *Broad-based support* is the situation in which all levels of the district backed the project. In this instance, the adopted project was seen as addressing a central educational need of the district, and active steps were taken to generate support from principal actors at all levels in the school system. The mobilization of broad-based support for a project did not depend upon the source of the idea, i.e., whether it originated in the central office or came from the grass roots; rather it involved the participation of all relevant levels and personnel in planning for the project. Effective participation did not mean that all levels democratically decided on all aspects of the process. Instead, there was typically a division of labor based on which level had responsibility for implementing an activity. As a result, the staff felt these projects were a *district* initiative, not simply "something teachers wanted to do" or the superintendent's "pet project."

These patterns of support (and their concomitant underlying motivations) deserve close attention from policymakers. They are crucial to the project's implementation and continuation, as subsequent sections discuss. They result from different processes, and to underline their importance we have used the term mobilization (rather than selection, adoption, or initiation) to denote the processes that embrace the first phase of innovation.

IMPLEMENTATION

Implementation, the second phase of innovation, involves the translation of project plans and proposals into practice. Whereas the major actors during mobili-

zation typically are central office administrators responsible for project planning, the major actors during implementation are project users, those responsible for carrying out project strategies and precepts. Perhaps because so many people must make so many everyday decisions, educational innovations invariably obey the empirical "law of implementation": Each classroom, each school, and each school system, being somewhat different from others, implements the same innovations in different ways at different times or places. In short, even when tested and developed in other sites, an educational innovation, unlike a new drug or a new variety of wheat, undergoes *adaptation* during implementation.

A key to understanding implementation, then, is adaptation at the user's level. Adaptation of projects in our sample occurred either in the adopted project's design or in the project's institutional setting or in both. Some project modifications were small. For example, one school district on the shores of Lake Erie had to make modifications in the curriculum of a California-developed project that dwelt at length on the geological lessons of the San Andreas Fault. Some adaptations represented more fundamental changes in project strategies and objectives, changes that took place over the course of implementation and reflected the feedback and judgment of project staff, or what one teacher called a "think-plan-do-revise" style of implementation.

Implementation was thus neither automatic nor assured. An innovation followed one of three processes, defined by the extent to which adaptation occurred in the project and its institutional setting:[1]

1. *Nonimplementation* occurred when the project neither altered its setting nor was adapted to it. Some projects simply broke down during implementation, particularly if they were very comprehensive or "overly planned" and prescribed; others were ignored or received scant attention from users, particularly if they had objectives that were trivial or peripheral to classroom concerns.
2. *Cooptation* occurred where the staff adapted the project, usually emasculating it, to meet their own needs, without any corresponding change in traditional institutional behavior or practices. Such projects could experience a deceptively smooth implementation.
3. *Mutual adaptation* occurred when *both* project and setting were changed. Mutual adaptation could involve a variety of adjustments to the project itself—for example, reduction or modification of idealistic project goals, amendment or simplification of project treatment, downward revision of ambitious expectations for behavioral change in the staff or of overly optimistic effects of the project on students, and so on. Concomitant with these modifications in project design or objectives, new behaviors were required by project staff, as well as new attitudes necessary for integrating project strategies into classroom practices. Mutual adaptation seldom meant smooth or trouble-free implementation. Indeed, from the perspective of an outside observer, the first year or so of project operations might often be seen as chaotic, as staff tried hard to make the project work for them.

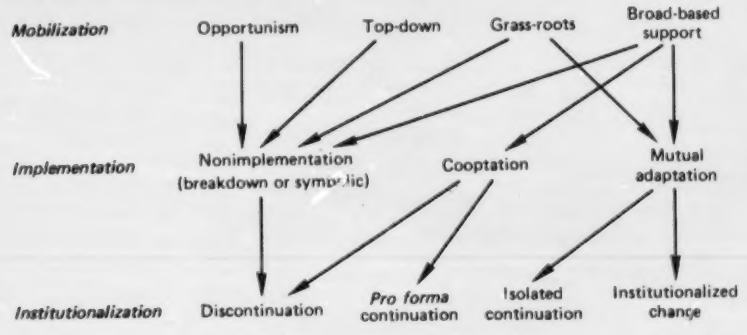
[1] A fourth process, which we call *technological learning*, represents a situation in which the staff would acquire skills in using a new educational method without adapting the method to the reality of the user's setting. At the extreme, "teacher-proof" packaged materials assume such implementation. However, we did not observe any real instance of technological learning. Instead, we found that even highly technological or prescriptive projects were either modified to suit local needs and interests or were implemented in a superficial manner that destined project materials for the schoolroom storage closets. Implementation, in short, never consisted of merely applying a fixed technology in an unchanging setting.

Not surprisingly, a project's outcome depended on the process characterizing its implementation. Projects that either broke down or were applied in a *pro forma* way (i.e., were essentially nonimplemented) caused little change in teachers and little improvement in student performance; they were generally perceived as achieving a low percentage of their goals. Coopted projects not infrequently achieved an average or above average percentage of their goals, depending on their complexity and ambitiousness, but they generally did not significantly alter the teachers' behavior. Projects whose implementation is best characterized as mutual adaptation were not invariably successful, particularly when their ambition surpassed their capacity. Yet, they had a better chance of being effectively implemented. Moreover, mutual adaptation was the only process leading to teacher change; in other words, teachers changed as they (and only as they) worked to modify the project's design to suit their particular school or classroom.

We can understand why mutual adaptation characterizes effective projects by looking more closely at implementation in the classroom. The task of teaching essentially consists of a one-to-one relationship between teacher and student. It thus necessarily depends heavily on idiosyncratic teacher and situational characteristics, and, consequently, the same project will be implemented somewhat differently in each classroom and in each school. If instead a project is applied uniformly or rigidly, it is unlikely that the new techniques will significantly or positively alter the teacher-student relationship. The development of new teaching behaviors within each classroom is a pragmatic, learn-by-doing process consisting of a step-by-step fine tuning of project design. Therefore, the process that fosters effective implementation and teacher change is one that promotes each teacher's ability, capacity, and motivation to accomplish this unique tuning.

It seems evident that a project that undergoes mutual adaptation requires considerable support from project staff and from district personnel; such support is generated at the project's beginning, during mobilization. This connection is an instance of a more general finding: A project's mobilization profoundly affected its implementation and indeed its ultimate fate in the district.

A diagram might clarify this linkage between the phases of innovation. The following figure shows that certain processes of mobilization tended to lead to certain processes of implementation (and as the next section discusses, to certain processes of institutionalization):[2]



Figure—The paths of innovation

[2] This diagram, as well as the discussion explaining it, portrays pure (or ideal) types of processes and only the most probable linkages among the phases. Mixed cases and improbable events can occur, of course.

1. Opportunistic projects typically failed to generate support from any component of the school system and accordingly were essentially not implemented. The staff was not committed to these projects and, hence, they were unwilling to invest the time and energy to make them work. Instead, opportunistically conceived projects existed in a *pro forma* fashion throughout the period of federal funding.

2. Top-down projects, which mobilized only the support of district officials, generally resulted in ineffective implementation or *pro forma* implementation without teacher change. More specifically, two cases predominated in our sample. First, top-down innovations, particularly those composed primarily of packaged management approaches, were prone to collapse from their own weight during implementation; teachers were not committed enough, or perhaps felt they were not allowed, to adapt the project to their own needs. Second, top-down projects frequently led to cooptation. Administrative fiat was not enough to overcome so-called "staff resistance"; it did not persuade teachers to expend the extra energy and effort to adapt to a project for which they had little responsibility. Instead, they tended to choose the path of least resistance by fitting the project into their standard practices.

3. Some grass-roots projects that failed to be supported by district officials broke down during implementation because of inadequate or insufficient resources and staff services (e.g., staff training and technical assistance). The level of district support in effect provides a "signal" to project staff as to how seriously they should take project requirements and objectives—and to what extent it is in their self-interest to work hard to achieve them. Even the most dedicated and enthusiastic project staffs can founder over the course of special project funding and allow themselves to become diverted from project activities if there is little or no indication from the district office that their efforts are valued. In contrast some grass roots projects, particularly those located within one school, were able to make do without a high level of district support; because of highly effective principals or project directors, these projects managed the art of implementation as evidenced in their mutual adaptation behavior. Their problem was less with implementation than with continuation, as the next section discusses.

4. Projects with broad-based support were not always implemented effectively (e.g., they could break down because the project's ambition outran the staff's capacity or they could be coopted because of poor implementation strategies, discussed in Sec. V, that never made clear to users what they should be doing). But for the most part, a full broad-based mobilization was followed by mutual adaptation.

INSTITUTIONALIZATION

Institutionalization, the last phase of innovation, marks the final transition of a change agent project to an accepted part of regular district operations or to its ultimate disappearance. In the particular case of a project funded by federal seed money, institutionalization has a prominent milestone: When federal funding ends, the district must decide whether to continue the project, and what level of support to give it if it is continued. For the projects in our sample, the continuation decision distinctly resembled the earlier decision to adopt the project. For one, the dominant actors were school officials and school board members, rather than the school staff

who played the key role during project implementation. Furthermore, organizational and political concerns once again were highly significant, often outweighing a project's educational merits. In short, just as the adoption decision could not accurately be characterized in rational decisionmaking terms, neither could the continuation decision.

Moreover, when a district decided to continue a project, this decision did not guarantee the project's long-run stability. As with adoption, the continuation decision also had to be implemented and, contrary to the assumptions of many local policymakers, the process that followed the continuation decision was no easier than the project's original implementation. Thus, when projects were not discontinued, districts could decide to expand some or all project methods and materials to maintain the project approximately at its federally supported level, or (as in most cases) to trim and focus the project. But regardless of the exact nature of their decision, continued projects could remain vulnerable to financial, personnel, and political problems. For example, two years after the end of federal funding, many highly successful project managers did not know how their resources would fare in the next budget cycle, who their staff would be, or whether the school board would ultimately do away with the project. To be secure, project practices had to be used regularly by teachers, become identified as part of the standard district educational repertoire, and receive the necessary district budget, personnel, service, and facility support to become integral elements of district operations. Only when these requisites were met did a change agent project lose its special status and become institutionalized.

Such institutionalization is particularly hard because of the organizational structure and operations of local school systems. It is altogether possible for district officials to promulgate a formal policy that the teaching staff does not actually follow; conversely, teachers, principals, and whole schools can ascribe to practices without the district's sanction or even knowledge. This "loose-coupling" of educational systems generated an odd situation: On the one hand, for many successfully implemented projects, teachers continued to use the project's methods and materials, even though the district apparently had no long-run intention of incorporating the project into standard district operations; on the other hand, district officials sometimes mandated their continuation, even though teachers were hardly using the project methods or materials at all. Both cases appeared to be quite unstable. The change caused by a project can only be institutionalized when both levels of the school system continue to support project practices.

More specifically, we found that the paths followed by change agent projects after the end of federal funding could be categorized into four types:

1. *Discontinuation* occurred when neither district officials nor building-level staff chose to continue project operations in any form after the end of federal funding. At the district level, this lack of support resulted from an explicit decision to drop the project, or it was the consequence of "benign neglect" on the part of school officials.

2. *Isolated continuation* occurred when district officials did not actively or explicitly turn the project off, but rather supported it inadequately if at all; despite a lack of support from the district, however, the project methods or materials were continued—essentially in isolation from other schools—by those project staff who had assimilated project strategies and chose to integrate them into their classroom

practices. Without assured support from the district, such pockets of change are likely to experience financial, personnel, and political difficulties in sustaining themselves. For example, they are quite vulnerable to staff turnover and principal transfers. Moreover, insofar as their operations depend on special budget allocations or support activities, they would seem subject to being severely curtailed at the first financial squeeze.

3. *Pro forma continuation* occurred when the district established the innovation or some aspect of it as official policy, but teachers did not use the project very extensively in their classrooms. In some cases, school staff simply did not employ project precepts; in others, project methods or materials were "continued" only in a ritualistic sense. For example, a reading project in our sample developed specialized materials and a curriculum keyed to diagnostic/prescriptive procedures. Due to political pressures—the board wanted to deal with declining test scores—and organizational considerations—district officials had used part of their federal grant to develop procedures for marketing the materials and training manuals to other school systems—district officials and the board decided to adopt this approach to individualization on a districtwide basis. However, teacher utilization of the reading program was low and appeared to be only symbolic; teachers conformed with project forms and nomenclature but essentially ignored the substance of project methods. District officials seemed aware of this *pro forma* ritual being played out at the classroom level, but perhaps believed that the mere existence of the formal district mandate would help to mollify the concerns of school board members.

4. *Institutionalized change* occurred when project-related change became part of the standard educational repertoire at both the district and classroom levels. Only a small proportion of "continued" projects in our sample were effectively institutionalized. They tended to have been successfully implemented, to have produced teacher change, and to be marked by the continued extensive use by teachers of project methods. (Other projects, namely, those characterized by isolated continuation, had similar outcomes. Not the short-range outcomes, however, but the *process*, distinguished institutionalized projects from other "successful" innovations.) Institutionalized projects planned for eventual continuation from the outset —when the project proposal was developed. The central office staff always aimed to replace some existing practices with the project, but were wise enough not to oversell the project's merits in its early phases. Though the change effort typically was limited to receptive schools, district officials paid early attention to mobilizing broad-based support for the innovation. And after federal funding ended, mobilization efforts were increased to pave the way for the project's transition from its special status to its incorporation into key areas of district operations: the budget, personnel assignment, curriculum support activities, and the instructional program. In short, the groundwork and planning for sustaining a change agent project had the early, active, and continued attention of school district managers.

Of course, the path followed by any particular project after the end of federal funding was foreshadowed by its prior mobilization and implementation, as illustrated in the figure on p. 17. Projects initiated for opportunistic reasons lacked the support of either district or school personnel, were poorly implemented if at all, and were discontinued when federal funding stopped. The lack of any serious intent crippled these projects from their beginning.

More generally, our research suggests that unless district-level staff were com-

mitted to the project from the outset, it was usually not possible to mobilize support for the project once it was under way or at the time that continuation decisions had to be made. Thus, top-down projects that failed to generate user support were often coopted during implementation and never did manage to gain teacher commitment; these projects could be mandated as official policy despite only *pro forma* continuation by teachers. Grass-roots projects had the same problem in reverse. Even when they were successfully implemented, these projects typically faced an indifferent district administration that allowed the project to be continued in isolation.

Because initial motivations at different levels of the educational system were so important, the only path leading to institutionalized change is predictable: Projects begun with broad-based support were not only more likely to have been implemented in a mutually adaptive way, but they also stood a better chance of attaining a stable continuation. The district was motivated and had already learned to mobilize support for and implement these projects when the need for remobilization and reimplementation was upon them at the end of federal funding. Without the district staff's prior commitment, and their successful experience in producing change, it is unlikely that these projects could have overcome the difficulties standing in the way of genuine institutionalization.

This overview of the process of innovation and the various paths projects can take provides a background for understanding the factors affecting the process and, therefore, the outcomes of change agent projects. Our next task is to identify these key factors.

V. FACTORS AFFECTING PROJECT OUTCOMES

The very complexity of the innovative process teaches us an obvious, though often ignored, lesson: No simple or sure way can be found to effect educational change and have it persist. Nor is any single factor *the* answer to successful innovation, whether it be money, a new technique, or a change in personnel. Rather, the fate of an innovation depends on the complex interplay among characteristics of the innovative project itself and the institutional setting it seeks to change. From these many characteristics, we sought to find out which ones had systematic and significant effects on implementation and continuation across a wide variety of projects and settings.

More specifically, we considered project outcomes (successful implementation, teacher change, improved student performance, and continuation of project methods or materials) to depend on three classes of factors:

- Federal policies (program aims and management strategies).
- Project characteristics (educational methods, project resources, scope of proposed change, implementation strategies).
- Institutional setting (organizational climate and leadership, school and teacher characteristics, district management capacity and support).

This section discusses how much each factor influenced what happened to local innovations.[1]

FEDERAL POLICIES

Section III discussed our general findings about the effects of federal change agent policies. The key points were: (1) The four federal programs all stimulated the adoption of innovations; (2) a project's educational effectiveness did *not* depend much on its source or amount of funding. Overall, then, the federal input at best precipitated local change efforts whose fate rested on other factors.

PROJECT CHARACTERISTICS

The initiation of an innovation produces an adopted project, consisting of a series of decisions about what is to be done and how to do it that together define the characteristics of the project. We find it convenient to divide these characteristics into the project's educational methods (also called the treatment or educational technology), resources, scope of proposed change, and implementation strategies.

Educational Methods

School people rarely adopt an innovation from outside their district without

[1] Volumes II and VII discuss these factors in detail.

changing it. Whether they wish to replicate a specific project they saw or heard about elsewhere, or apply a general educational concept such as differentiated staffing, project designers tend at the beginning (i.e., during the mobilization phase) to adapt the innovation to the local setting as well as to their own interests. For example, a mastery learning project that was successful elsewhere may incorporate materials that are not appropriate for the staff or students of an adopting district. Or, district staff may like the reading instruction strategies of one project, but prefer to use the classroom organization methods of another. As a consequence, the project adopted often comprises an amalgam of educational techniques and strategies that may be virtually unique to the district.

Nonetheless, change agent projects also have certain central characteristics or foci. The projects in our sample tended to center on one, and sometimes a mix, of the following general types of educational approaches: individualization (or student-centered) techniques; classroom organization change; curriculum revisions; community involvement; administrative changes; general enrichment; and use of specialists for student needs. Our analysis explored two questions. First, to what extent did the educational approach or method of a project influence its implementation, its effects on teachers and students, and its continuation? The answer for our sample is that it did to some extent, but not very much. Second, did some educational methods have more significant effects on project outcomes than others? The answer is that they did, but the differences are not great.

The small yet real differences among the effects of different educational treatments are easy to trace. For example, projects concentrating on curriculum revision had a slight tendency to be implemented more effectively and to improve student achievement more than did other methods. Classroom organization projects were somewhat more likely to result in teacher change and to have project methods—not materials—continued by teachers. This finding is not surprising in light of the distinct foci and activities of these educational strategies. That is, projects emphasizing curriculum development and revision typically begin with well-specified objectives, and focus on student cognitive growth. Classroom organization projects do not explicitly address student achievement, but concentrate on changing traditional patterns of classroom management and student-teacher interaction. Consequently, projects of this nature require the most significant changes in the way teachers do things—changes in method that, once assimilated, are often sustained.

Projects designed to have a great deal of community involvement appeared to have a direct effect on promoting teacher change, similar to the effect of classroom organization projects. However, there were two very different, though overlapping, ways in which projects sought to involve the community. Some stressed direct parent involvement; others centered on using community resources or undertaking field trips, and invited parents to observe and assist. We found that projects aiming primarily at direct parent involvement produced more teacher change and were more likely to be continued by teachers (though often without formal district support) after the end of federal funding—probably because project staff had high initial commitment to parent participation in school affairs and governance. The other type of community involvement projects had a slight negative but not significant effect on continuation. Field trips tended to be taken somewhat casually; they were typically discarded as an "unessential activity" when soft money went away. The same finding appeared to hold for general enrichment projects or for projects

dealing with such top-down administrative changes as management-by-objectives or planning programming budgeting systems; they generally were discontinued or, at most, retained in a *pro forma* fashion.

These differences notwithstanding, the evidence supports the broad hypothesis that the educational method chosen determines a project's implementation, effect, and continuation to only a small and limited extent. Our discussion of the innovative process suggests why: Projects with essentially the same educational methods can be, and usually are, mobilized and implemented very differently and thus more or less effectively. In short *what* the project was mattered less than *how* it was done.

Project Resources

Our findings about the effects of project resources are similar to those about educational methods: More expensive projects were generally no more likely than less expensive ones to be effectively implemented, elicit teacher change, improve student performance, or be continued by teachers. Nor did variations in the number of project schools per district or in the funding per student strongly affect project outcomes in most cases.

The variants of this general finding are noteworthy. The greater the number of schools in a project, the higher was the proportion of project materials continued, because these large projects typically involved new curriculum material or educational hardware that districts retained after the end of the federal grant. In such cases, teachers made some use of the materials purchased with federal money, but they did not change their teaching behavior. Moreover, the continued use of project materials was often not accompanied by a continued use of project methods, and overall district continuation tended to be *pro forma*. In short, some districts used the federal grant more to purchase up-to-date materials and technologies than to promote basic educational reform.

Another significant variant involved the concentration of project funding: Projects having a higher funding per student tended to produce a greater improvement in student performance than projects with less concentrated funding. However, this effect comes primarily from remedial projects that focused on individualization, were located in schools in areas of lower socioeconomic status, and sought to increase the performance of students who were below-average achievers. The heavy concentration of funding for these remedial projects paid for classroom aides, many of whom were not kept on after the end of federal funding. The teachers in these projects indicated that they had not changed their styles very much, nor did they continue using project methods or materials extensively after the end of federal funding. In short, these remedial projects improved student performance, but we suspect this effect will be short-lived. Successive generations of students are unlikely to benefit, and the federal money spent for aides will have had only a fleeting effect on district practices.

In terms of district financial support, the more expensive the project was, the more likely it was to be cut back when "soft" money had run out. Projects with a high funding per student were particularly likely to cut back or eliminate aides to the teaching staff. Projects that spanned both elementary and secondary schools were likely to be discontinued or reduced to a less inclusive project—e.g., to only one junior high school. These comprehensive innovations not only spread their

financial resources thin, they also seemed to be trying to accomplish too much too soon.

However interesting these particular relationships may be, they are variants of the more general conclusion: Like federal management strategies and the choice of educational methods, differences in project resources mattered less than local choices about how to implement the project.

Scope of Proposed Change

The scope of a change agent project—how much it seeks to accomplish relative to its setting—concerns local officials as well as federal and state planners. Should ambitious and comprehensive innovations be supported, despite a possible high risk of producing no change at all, or should narrow, presumably "safer" bets be backed? Our analysis shows that this question does indeed deserve serious attention, because the project's scope influenced implementation and continuation in many ways. Though we did find more difficulties associated with more ambitious efforts, the question has a deceptively simple answer: Little ventured, nothing gained.

One major reason for the significance of the project's scope was its effects on teachers in their daily classroom practice. At this level, two related aspects were particularly important; the *type* of change required in teaching practice, and the *amount* of extra effort required of teachers. Project designs that called for a change in teaching behavior from standard or traditional practice were more likely to achieve such change than other projects. Similarly, the more extra effort asked of teachers, particularly during the hectic first year of implementation, the more likely they were to respond positively; they were more likely to change their own practices, and to truly assimilate and therefore continue using the project's methods. Such ambitious and demanding projects did create short-run problems for both teachers and administrators; yet, by the end of the federal funding period, they were no more or less likely to fail (or to succeed) in meeting their objectives or in promoting improved student performance than were more narrowly focused or less ambitious projects. In other words, attempting less does not necessarily assure more effective implementation, but it can foreclose teacher change of a lasting variety.

Thus, our data indicate that teachers rise to challenges. Ambitious and demanding innovations seem more likely to elicit the commitment of teachers than routine projects. This is so in part because these projects appeal to the teachers' professionalism; that is, we believe a primary motivation for teachers to undertake the extra work and disruption of attempting change is the belief that they will become "better" teachers and that their students will benefit.

These findings about the project's scope should be seen as necessary, not sufficient, conditions. Whereas change is unlikely unless it is required, ambitious and demanding innovations, perhaps even more than other projects, can go wrong in many ways.

One problem arises from the inherently amorphous quality of some innovations. For example, we have seen similar open education projects that, even after three years of operation, were quite different in the extent to which the staff grasped the innovation's philosophy and operational objectives. Insofar as the staff does not achieve *clarity* about their objectives, the project is subject to breakdown

during implementation, to cooptation, and to eventual abandonment. Generally, we found that clarity—the extent to which staff felt the project had specific objectives—had a major effect on implementation: Teachers can better implement innovations if they clearly understand the project's purposes. For ambitious projects, clarity is not something the staff can be given at the outset, although it can be facilitated by well-specified project designs. Nor can it be guaranteed by the use of packaged materials or lectures from outside consultants. Rather, it must be achieved through practical, concrete training activities that permit project staff to understand the significance of project precepts as they apply them to their own classrooms. We discuss the importance of such training in the next section.

A second problem arises from the project's comprehensiveness relative to the size of the school system. Districts in our sample seldom tackled projects that were both demanding of teachers and comprehensive, i.e., covered a large number of schools or spanned most grades in elementary, junior, and senior high schools. Therefore, we cannot say what happens when an ambitious change effort is tried district-wide. However, our data indicate that more comprehensive projects were not more effectively implemented and tended to be somewhat less likely to produce teacher change. Projects that were adopted district-wide (but did not span all grade levels) focused on curriculum revision and tended to have their project materials continued (often, we suspect, in a *pro forma* manner). Projects spanning elementary and secondary school levels were quite likely to be poorly implemented and to be discontinued, or severely cut back, at the end of federal funding.

In summary, ambitious and demanding innovations promoted teacher change and teacher continuation of project methods without necessarily causing unmanageable implementation problems or diminishing gains in student performance. Teachers must clearly understand these project goals and precepts; such clarity ordinarily comes during implementation. We doubt whether projects aiming at significant change could be effectively implemented across the whole school system at once. A wiser strategy would be to go step by step, so that each school or group of schools can pass its particular threshold of change before new changes are attempted.

Implementation Strategies

In terms of policy import, a major finding of this study involves implementation strategies—the local decisions and choices, explicit or implicit, about how to put an innovation into practice. We found that these strategies could spell the difference between success or failure, almost independently of the type of innovation or educational method involved; moreover, they could determine whether teachers would assimilate and continue using project methods or allow them to fall into disuse. Implementation strategies should be particularly important to policymakers, even though such elements of the institutional setting as school leadership and teacher characteristics had even greater effects on the project's fate; while there can be no direct leverage on the institutional setting, policy instruments might be formulated that could influence the choice of implementation strategies.

Our evidence clearly indicates that some strategies *usually* did not work and, indeed, could hurt the project's outcomes and chances for continuation. We underscore "usually" because we wish to make it clear that these generally ineffective strategies could help in a few rare and special instances; but their probable ineffec-

tiveness is due to their mismatch with the typical reality of school district life, and with the dominant motivations and needs of teachers. These strategies and the particular reasons for their ineffectiveness are:

1. *Outside consultants.* Project staff typically saw the assistance offered by outside consultants as too general, untimely, and irrelevant to the problems of their classrooms. Effective implementation requires the adaptation of project strategies to the particularities of each school and classroom, but most outside consultants had neither the time nor the necessary information to tailor their advice to the individual school or classroom. Furthermore, because the use of outside consultants typically involves considerable advance planning and scheduling, and because outside consultants are generally not available on an "on-call" basis, the help provided by consultants often cannot be delivered in a timely fashion, i.e., as problems arise during implementation.

2. *Packaged management approaches.* Packaged approaches to planned change typically were too inflexible to permit the local adaptation necessary to effective implementation. However comprehensive the "road map" provided by educational packages, they could not anticipate those local conditions or events that require project plans and practices to be modified. Packaged approaches to change also tended to overstate the role of technology or of a new practice in improving education delivery, neglecting the much more important elements of classroom management and teacher commitment. Furthermore, even were packages to increase the efficiency of implementation, they seem to pose a severe problem for continuation, by depriving the staff of a necessary sense of ownership of the materials.

3. *One-shot, preimplementation training.* Projects that concentrate all of their training efforts in one intensive session, or in sessions prior to project implementation, often do so out of concerns for efficiency and economy. However, for many projects, training of this nature was unable to provide the assistance teachers needed during implementation. The training and assistance needs of teachers change over time as they encounter new problems in their classrooms, and usually cannot be accurately anticipated. But even if it were possible to forecast the nature of staff training needs, training that treated issues before they became problems was usually not meaningful to project staff.

4. *Pay for training.* Extra pay for training either was not significant or tended to be negatively related to implementation effectiveness, teacher change, student improvement, and project continuation. This strategy fails because it seriously misconstrues the motivations that lead most teachers to want to change their practices. Teachers typically elect to spend the time and energy necessary to carrying out a new practice primarily out of professional concerns—because they believe these efforts will help them to become better teachers. Extrinsic rewards such as pay for training cannot stimulate the commitment of teachers if they do not see it to be in their professional self-interest.

5. *Formal evaluation.* It is usually assumed that formal project evaluations will provide summative data for decisions about continuation, but they rarely served their intended function. Except in instances of patent "failure," evaluation findings were generally not the most important factor in district decisions about project continuation after federal funding ended. Local bureaucratic and political concerns significantly influenced these decisions: Do the parents want the project?

Does it bring visibility to the district? Is there pressure from teachers to continue project activities? Moreover, where commitment to continue a project existed, district officials often dismissed disappointing evaluation results as "premature" or "badly measured." Formal evaluation activities also failed to serve a formative purpose during implementation. Because formal evaluations rarely assessed process issues (adequacy of training, communication between staff, and so on) and because they were seldom conducted on a routine or regular basis, they did not provide timely and appropriate data that would help project participants to modify and refine project activities.

6. *Comprehensive projects.* Comprehensive projects often failed because they attempted too much too soon. K-12 projects, for example, encountered difficulty because project strategies were insufficiently discriminating between the very different needs, motivations, and interests of primary and secondary school teachers. Similarly, projects that included a large number of district schools or classrooms typically offered a uniform or standard project strategy that could not accommodate the needs and priorities of particular schools or classrooms. In addition, some district-wide projects spread project staff and resources too thin, thereby (a) foreclosing the possibility of creating a "critical mass" of participants in any one school —i.e., other colleagues who can provide support and encouragement—and (b) diluting the quality of project support (e.g., readily available technical assistance, formative evaluation, and project director involvement) that is important to effective implementation. These projects were usually sharply reduced after the end of federal funding.

In contrast to the above ineffective strategies, effective implementation strategies promoted mutual adaptation, the process (described in Sec. IV) by which the project is adapted to the reality of its institutional setting, and teachers and school officials adapt their practices in response to the project. In terms of individual classrooms, the process consists of each teacher developing new methods and practices while adjusting the project design to classroom conditions: It is essentially "learning-by-doing." Effective implementation strategies foster mutual adaptation by providing each teacher with necessary and timely feedback, allowing project-level choices to be made to correct errors, and encouraging commitment to the project. These effective strategies *usually* contributed positively to project outcomes and chances for continuation. This time we underscore "usually" to qualify the findings in two important respects.

First, these strategies are not a panacea. They obviously do not work if they are poorly executed, as was often the case when they were routinely applied. For example, though frequent and regular project meetings could promote mutual adaptation (for reasons discussed shortly), they also could be extremely boring and serve no purpose other than administrative routine. Indeed, we found that frequent, unproductive meetings actually impaired project implementation. This dominance of quality over quantity held for all the implementation strategies: When they were useful, they were very, very useful; when they were bad, they were a waste of time, money, and energy. The "quality" of these strategies primarily depended on two elements: the skill and leadership of the project director, principal, and district staff, and the "practicality" of the strategies.

Second, effective implementation strategies work best when applied in concert with other effective strategies; indeed, they may not work at all when applied

separately. Thus, rather than referring to several *strategies*, it seems more appropriate to speak of the project's overall implementation *strategy* and, accordingly, to analyze the *elements* of the strategy that support mutual adaptation. The following elements, when well executed, had major, positive effects on project outcomes and continuation:

1. *Concrete, teacher-specific, and on-going training.* Teachers required concrete, "hands on" training in translating often very general and fuzzy project guidelines into classroom practice, and adapting project concepts to the reality of their particular situation. However, because they are one step removed from classroom operations, even insightful and talented project directors cannot always accurately predict the type of training teachers require; thus, training that was determined in large part by the project participants themselves seemed most likely to aid implementation. Mutual adaptation was fostered, especially on complex projects, by training that continued during and beyond the project's first year.

2. *Classroom assistance from project or district staff.* Local resource personnel promoted mutual adaptation by offering relevant, practical advice on an "on-call" basis. Furthermore, because local resource personnel were able to furnish frequent, though short, on-the-spot assistance, they were less likely than outside consultants to preclude important learning opportunities for the staff; consequently, projects providing effective classroom assistance were more likely to be continued by teachers.

3. *Observation of the project in other classrooms or districts.* Project staff in our sample usually did not observe other operating projects. But when they did visit other schools or districts (for at least a full day), their experience seemed to aid implementation, particularly for amorphous innovations such as open education. Peers were generally the most effective counselors when it came to advising implementors-to-be about problems they could expect, suggesting ways to remedy them, and encouraging new project staff that "they can do it too."

4. *Regular project meetings.* Regular meetings of project staff that focused on practical problems, not administrative or routine matters, often provided (a) a forum for the feedback necessary to adaptation, (b) an opportunity to share successes, problems, and suggestions, and (c) a vehicle for building the staff morale and cohesiveness important to effective implementation. However, meetings were seldom effective without a supportive school climate.

5. *Teacher participation in project decisions.* Teacher participation in decisions concerning project operations and modifications was strongly correlated with effective implementation and continuation. The reasons for this powerful effect were easy to uncover. Teachers, who are the closest to the problems and progress of project activities, are in the best position to suggest remedies for perceived deficiencies. Moreover, where project activities and objectives reflected significant teacher input, the staff were more likely to invest the considerable energy needed to make the project work. The project, in short, was "theirs."

6. *Local materials development.* The local development of materials for the project provided staff with a feeling that their professional judgment was valued, with a sense of project ownership, and with an opportunity to learn-by-doing. Thus, the contribution of this activity to project implementation extended beyond the quality of the resulting product. The *process* of materials development promoted

the clarity and commitment necessary to effective implementation and long-term continuation.

7. *Principal participation in training.* The active support of the principal was vital to the project's implementation and especially to its continuation, as the next subsection discusses. One measure of that support was the extent to which principals participated in project training activities. Involvement of the principal in staff training provided the information and skills needed to help teachers implement the project and sustain project activities in the face of eventual staff attrition. More important, it signalled the staff that their efforts were supported and valued.

INSTITUTIONAL SETTING

Practitioners will not be surprised to learn that the local institutional setting had the major influence on project outcomes and continuation. Without wishing to belabor the obvious, we will differentiate among the effects of the various components of the setting, so that policy can be based on a more precise notion of what can and cannot be changed, and how features of the institutional setting can be expected to influence the results of federal change agent policies. We analyzed three components of the institutional setting: organizational climate and leadership, school and teacher characteristics, and district management capacity and support.

Organizational Climate and Leadership

Three elements of a school's organizational climate powerfully affected the project's implementation and continuation—the quality of working relationships among teachers, the active support of principals, and the effectiveness of project directors. Each played somewhat different roles and had somewhat different effects.

The development of good working relationships among project teachers enhanced implementation and promoted classroom continuation of project methods and materials (but had no strong effect on student performance or teacher change). When teachers worked well together, they formed a *critical mass* that could overcome both task and emotional needs. For example, by openly sharing their implementation problems and individual solutions, teachers learned from each other and could support each other. Of course, good project relationships did not develop in a vacuum; they occurred in schools that already had high morale (i.e., in schools that teachers felt were good places to work in and had good *esprit de corps*) and in projects in which teachers participated in decisions about adaptation. The sense of ownership that evolved in these cases is a basic reason why good working relationships were strongly correlated with the teachers' continued use of the project.

The importance of the principal to both the short- and long-run outcomes of innovative projects can hardly be overstated. When teachers thought that principals disliked a project, we rarely found favorable project outcomes. Some projects with neutral or indifferent principals scored well, particularly in the percentage of goals achieved; but these projects typically focused on individualization or curriculum revision, and had highly effective project directors who compensated for the lukewarm principals. Projects having the *active* support of the principal were

the most likely to fare well. In general, the more supportive the principal was perceived to be, the higher was the percentage of project goals achieved, the greater the improvement in student performance, and the more extensive the continuation of project methods and materials.

The principal's unique contribution to implementation lies not in "how to do it" advice better offered by project directors, but in giving moral support to the staff and in creating an organizational climate that gives the project "legitimacy." This role is particularly demanding for ambitious projects; for example, such innovations as open education can be viewed as a radical and undesirable departure from the school norm unless the principal actively supports them and runs interference against disapproving nonproject teachers or parents.

The principal's support was also crucial for continuation. This relationship is understandable, considering that the principal typically sets the educational style of the school. Teachers were unlikely to continue a full array of project methods without the approval of their principal, even if the methods were successful and had been assimilated. To do so would not only be difficult in light of the sometimes subtle, sometimes blunt means that principals often employ to establish a uniform "school style," but also would appear contrary to professional self-interest. Moreover, after the end of federal funding, many districts took a laissez-faire attitude, letting the principals decide the fate of the project within their schools. Unless principals actively promoted the project, particularly when it came to replacing staff and seeking district financial support, even "successful" projects could wither away. All told, the principal amply merits the title of "gatekeeper of change."

Our data leave little doubt that an effective project director greatly enhances the implementation of a special project. But in sharp contrast to the findings about principals, project directors had no significant effect on continuation for our sample of projects.

Why does the project director "matter" for project implementation but not for continuation? The answer can best be understood in light of the different tasks and activities in the implementation and continuation phases. A central aspect of implementation is the teachers' acquisition of new skills, behavior, and attitudes; this task-specific learning can be greatly facilitated by an effective project director. The director's special skills and knowledge can clarify project goals and operations, minimize the day-to-day difficulties encountered by classroom teachers, and furnish the concrete information they need to learn. Once federal funding ends and continuation begins, however, task-learning is no longer a major staff activity. (If teachers have not learned project strategies and methods by then, it is unlikely they ever will.) The activities central to continuation require integration of project precepts into routine classroom activities and, in some cases, the modification of standard institutional procedures. Thus, in this phase, the specialized skills and knowledge of the project director become less important to project teachers than the institutional support of the principal and other district staff. In fact, it is not unusual for project directors to assume an entirely new role after the end of federal funding. Many either resume their former positions in the district, go on to head innovative projects in other districts, or, in the instance of Title III "validated" projects, launch a heavy schedule of project dissemination.

Characteristics of Schools and Teachers

We gathered data on a wide variety of school characteristics. For example, we collected information on the academic, ethnic, economic, and social makeup of the school's student population, the size of the school and stability of the staff, and the school's experience with other innovations. (Similar data were gathered at the district level.) None of these "background" or structural characteristics strongly affected any of the project outcome or continuation measures. Our nonrepresentative sample precludes our drawing generalizations about this lack of significance. We suspect, nonetheless, that these background characteristics matter less for project outcomes than do the factors discussed above (the organizational climate, the principal's leadership, and the project director's effectiveness). However, two other characteristics do seem important—whether the school is at the elementary or secondary level, and the attributes of the teaching staff.

Change was typically harder to obtain and continue at the secondary level. The reasons for secondary schools' difficulties are too numerous to detail here, but perhaps it is worth citing the problem most mentioned by practitioners. In the words of one superintendent commenting on difficulties encountered on a career-awareness project, "[high school] teachers are simply unwilling to vacate [what they see as] their responsibility to subject matter in adjusting to supplementary materials." In short, secondary school teachers may be "subject-oriented," in contrast to the "child-centered" orientation attributed to elementary teachers.

Three teacher attributes—years of teaching, sense of efficacy, and verbal ability—significantly affected most project outcomes. We found that years of teaching and teacher sense of efficacy had strong and significant, but very different, effects on most of our outcome measures. Specifically, the number of years of teaching had *negative* effects: The longer a teacher had taught, the less likely was the project to achieve its goals or to improve student performance. Furthermore, teachers with many years on the job were less likely to change their own practices or to continue using project methods after the end of federal funding.

The teacher's sense of efficacy—a belief that the teacher can help even the most difficult or unmotivated students—showed strong positive effects on all the outcomes. Teachers' attitudes about their own professional competence, in short, may be a major determinant of what happens to projects in classrooms. In contrast, teachers' verbal ability had no relationship to project implementation, outcome, or continuation with the exception of its positive correlation with improved student achievement.

These results raise questions about the design of change agent projects: Is it possible to instill a new willingness to change in veteran teachers? If not, our findings imply that innovative projects should be staffed with efficacious, less "resigned" teachers. That raises a further question: Is it possible to enhance teachers' sense of efficacy? Districts can always handpick staff for pilot projects, of course, but that amounts to a delaying strategy if the eventual intent is to spread innovations or to maintain them among the general run of teachers after the original cadre of teachers moves on to other tasks. If teacher characteristics can be modified, then projects could be staffed with the usual mix of personnel, and appropriate staff development strategies could be employed to compensate for staff shortcomings. This strategy would enhance long-run continuation if its staff development component were also equipped to handle personnel turnover. Though our

quantitative data do not address these issues, our field experience suggests that staff development activities could be used to raise the sense of efficacy and rekindle the enthusiasm of many teachers.

District Management Capacity and Support

Districts differ sharply in their capacity to manage change agent projects and in their receptivity toward them. Though we could not measure these factors with precision, our observation and interview data leave little doubt as to the importance of constant and active support from LEA officials and specialized staff for the project's short-run outcomes, and especially for its long-run fate.

Section IV's discussion of the innovative process suggested why district support is crucial. During mobilization, the support of the central office staff can determine whether planning for the project is adequate and whether teachers and administrators become committed. For example, an opportunistic attitude or top-down district approach communicates to the staff that the district does not care about the project or does not value the project's implementation.

It was not unusual for LEA officials to neglect projects during implementation. At the time of the continuation decision, however, the support of central officials becomes crucial again, and their attitudes, pro or con, often had not changed since the project's beginning. Their continuation decision seemed to rest on the project's centrality (i.e., how important the project was to the district's educational priorities) and on local political and organizational concerns, not necessarily on how successfully the project had been implemented. As Chapter IV noted, however, once a decision was made to continue a project, district officials had to provide active support if the innovation was to be sustained.

More specifically, supportive districts designed from the beginning continuation strategies that were aimed at maintaining the project in the face of financial, personnel, and political uncertainties. The exact nature of these continuation strategies (as well as their effectiveness) depended on the particular attributes of the local setting, but the broad outlines of their objectives can be seen.

They aimed to smooth the project's transition from its special status to its institutionalization (i.e., to becoming a regular part of district operations). In the budget area, the project had to change its status from a special line item to a standard activity absorbed in the district's operating budget. Political groundwork typically had to be laid to convince school board members of the project's priority. In the personnel area, a procedure for replacing key project personnel had to be established; for example, some LEAs use project participants as a "training cadre." In the area of curriculum support, staff training and development needs had to be incorporated into regular in-service activities so that new project members would be integrated smoothly and older ones kept fresh. In the instructional area, projects had to replace existing practices; this meant that district officials once again had to mobilize the support of principals and teachers.

In summary, from beginning to end, a supportive institutional environment was necessary for a project to be effectively implemented and to take root.

CONCLUSIONS

1. Federal change agent policies stimulated the adoption of innovations consistent with federal priorities, but neither those policies unique to each federal program nor those policies common to them strongly influenced the fate of adopted innovations.

2. The choice of educational methods and the resources available (e.g., the amount of funding and the funding per student) determined the project's outcomes and continuation to only a small and limited extent. Inputs to school districts, whether money, new methods, or federal guidelines, mattered less than other local factors.

3. Ambitious and demanding innovations promoted teacher change and teacher continuation of project methods without necessarily causing unmanageable implementation problems. Because such innovations appealed to the teacher's professionalism, they were more likely than routine projects to elicit the staff's commitment. Clarity of project goals and precepts was important in the implementation of all projects, but particularly for those attempting a broad scope of change; however, clarity often had to be achieved in the course of implementation.

4. Locally chosen implementation strategies strongly influenced both the project's short-run outcomes and its longer-run fate. The elements of a strategy that fostered mutual adaptation and therefore more effective implementation, and that improved student performance, promoted teacher changes, and enhanced the continued use of the project at the classroom level were:

- Concrete, teacher-specific, and extended training.
- Classroom assistance from project or district staff.
- Teacher observation of similar projects in other classrooms, schools, or districts.
- Regular project meetings that focused on practical problems.
- Teacher participation in project decisions.
- Local materials development.
- Principal participation in training.

5. Leadership was a vital factor at both the school and the project level. Effective implementation required a good project director and a supportive school climate led by an active principal. But continuation depended less on having an effective project director than on the early and lasting support by the principal.

6. Aside from the difficulty encountered by secondary school projects both in achieving effective implementation and in promoting teacher change, we found no systematic effect of school background characteristics. But teacher characteristics were critical. Above all, the teacher's sense of efficacy emerged as a powerful explanatory variable; it had major positive effects on all classroom-level outcomes. The teacher's years on the job, in contrast, had a consistent negative relationship to project outcomes. The teacher's verbal ability was positively associated with improved student performance, but otherwise did not affect project outcomes or continuation.

7. A supportive district environment is necessary for an innovation to be effectively implemented and sustained. This means that district officials must mobilize a broad-based commitment to the innovation at all levels of the LEA. Moreover, from the project's outset, they must design continuation strategies that provide for the transition of the special project to a standard element of district operations.

VI. IMPLICATIONS FOR FEDERAL POLICY

Four years of research on a wide spectrum of educational innovations attempted in many different local settings across the nation has taught us a number of "lessons" about school district responses to federal change agent policies. Many of these lessons have direct operational significance for local policymakers, and most can be readily inferred from the findings of the preceding sections. The lessons for the federal government are more basic, if less direct. We thus conclude with some reflections on the study's implications for federal policy.

Our research adds to the growing body of literature that casts doubt on the effectiveness of federal educational policy. It is now widely acknowledged, for example, that federal reform efforts overestimated the extent to which schooling could serve as an effective agent for social reform. Thus, both proponents and critics of ESEA Title I assumed—particularly in the early years—that compensatory education strategies could contribute significantly to "equalizing" the life opportunities of advantaged and disadvantaged youngsters. Yet, short of drastic change in the U.S. education system, there appear to be limits on how much public schooling can change students, either absolutely or relative to other social influences (e.g., the family, peers, or the economic system). Because of these limits, more and more policymakers now believe that federal education policy should aim for less and promise less. Idealistic goals such as "eliminating illiteracy by 1984" (Right-to-Read program) are patently unrealistic, and fail to give sufficient direction to those responsible for implementation, thereby setting the stage for the inevitable "failures" reported on in the preceding sections.

Many federal officials also have come to realize that they have been too optimistic about how much time is required to produce change in the educational system. Our research suggests that any significant innovation or new project in school districts takes about two years to "get off the ground," another two years to be fully implemented, and one or two years more to produce a stable effect on student outcomes. To this five or six years in the school district, one must add the time required for new government programs to take shape and reach stability at the state and federal level—from two years (e.g., Career Education) to five years and beyond (e.g., ESEA, Title VII). It takes, in sum, on the order of seven years before the educational effects of a new policy can be tested. But federal policymaking often has not shown that much patience. Whatever other problems such federal programs as the Education Professions Development Act may have had, they did not last long enough to prove themselves.

Most important, there is a growing belief that policymakers have overestimated the influence of federal incentives on local practices. They assumed that the incentives and disincentives associated with federal funds afforded considerable direct leverage, but the research evidence discussed earlier strongly indicates that change in school district practice depends on local choices and factors little affected by federal incentives. In short, federal expectations need to be adjusted to the reality of limited federal influence.

In that light, a skeptic could argue for a sharply reduced federal role in educational improvement, but we do not agree. On the contrary, we believe that our

research gives cause for cautious optimism. We have found some effective local projects and have identified some local factors that federal policy could influence. In our view, federal policy has erred not only in expecting too much, but also in failing to use properly the small amount of leverage that it could have over these local factors. Both difficulties are in part due to faulty federal premises about school district behavior. We believe that this study provides the basis for more realistic premises. Although the adoption of these premises would not alter the inherently restricted nature of the federal role, they could help to improve what can be done under these restrictions. Accordingly, the remainder of this section discusses past assumptions that have proven inaccurate, proposes alternative premises about LEA behavior, and suggests what these premises might mean for the federal role in educational improvement.

FAULTY ASSUMPTIONS ABOUT SCHOOL DISTRICT BEHAVIOR

Our research suggests that federal policy has often been based on misconceptions about the reality of school districts and the factors that produce change in their organizational and educational practices. Correct assumptions would not, of course, automatically improve policy effectiveness, because any policy may be poorly implemented. But faulty assumptions—indeed even *one* faulty assumption among otherwise good ones—can lead to ineffective and counterproductive programs. This section analyzes three assumptions—evident in a score of federal programs—that our research has shown to be faulty.[1] A point of view about the relationship of the federal government to school districts underlay these assumptions. On the one hand, reformers believed that schools needed improvement and that national policy had to precipitate and direct reform. On the other hand, federal officials felt they could not, and perhaps should not, intervene heavily in local affairs. The solution to their dilemma seemed to be suggested by America's dramatically successful research and development experience in such technological areas as nuclear development and space exploration, as well as by deep strains of optimism and rationalism in American culture: The federal government would develop new technologies, provide incentives for their adoption, and introduce these technologies into school districts by projects that were targeted, and thus accountable. In a sense, school districts were thought of as "black boxes." Federal "inputs" would be supplied to change and control their behavior so that a desirable educational "output" could be achieved. This R&D point of view was embodied in the following assumptions.

1. *Improving educational performance requires innovative educational technologies.* It was believed that if the nation's school systems adopted new technologies (curricula, teaching practices, school management, etc.), student performance would be improved. One set of views held, for example, that variability and general inefficiency in teaching performance could be

[1] We recognize that most federal programs contain a mix of realistic and unrealistic assumptions; therefore, our discussion should be viewed as a characterization of the prevailing thrust of the past decade's federal effort rather than an analysis of any particular program.

corrected by the development of "packages" of curricula and "teacher-proof" classroom management practices. It was often assumed that technological innovation could be produced effectively in educational R&D laboratories or by documenting "exemplary" projects in school districts. Once innovations were produced, the main problem was thought to be dissemination, i.e., encouraging schools to adopt the new technologies.

As Sec. V discusses, we put this technological assumption to a direct test. We tried to determine whether there was a significant relationship between the type of educational method used on about 300 innovative projects funded by four federal programs and several measures of project outcome. We found none. In other words, the adoption of any particular type of educational method did not consistently lead to better outcomes from district to district, even though these methods had been previously tested and developed elsewhere.

Instead of the assured replication of transplanted projects, we found that the *same* innovation typically was implemented differently in different school districts, in different schools within the same school district, and even in different classrooms within the same school. Moreover, "packaged" projects, which prescribed procedures for teachers and project directors in ways that precluded the innovation's adaptation to the local setting, typically could not be implemented effectively. This evidence strongly suggests that the role of technology in educational reform has been misunderstood. The adoption of "better" technological innovations may be an important ingredient in a successful planned change, but this adoption by itself does not invariably or automatically result in better student performance.

2. *Improving educational performance requires the provision of missing resources to school districts.* It has been assumed that school districts would reform themselves if they had more money, greater awareness of innovations, or increased technical know-how. The perceived need was the missing resource—supplemental federal funding, information about innovations, or technical assistance.

Despite the plausibility of the missing resource approach, it has not generally worked in application. Neither more money, more information, nor more technical assistance by themselves have consistently improved educational practice. Our research suggests why: These forms of outside aid lacked leverage on the local factors that spell the difference between innovative successes and failures.

Early federal efforts to disseminate information emphasized the need to make school districts aware of exemplary innovations. If adoption of new educational practices were the sole factor, then awareness would surely be critical. Adoption, however, is but the first step in implementing an innovation. Section IV suggests that effective implementation is more likely if adoption is done in a problem-solving manner, in which schools identify their needs and then seek solutions to them. But most federal dissemination efforts only made districts aware of new educational products, and not of their own needs. Unwittingly, federal policy thus fueled the preoccupation of the 1960s with innovations for their own sake.

Moreover, research has shown that the awareness needed to make new educational practices work goes much deeper than information afforded by visits to Educational Fairs or by the reading of project pamphlets. To overcome implementation difficulties, local project staff must adapt the innovation to their own condi-

tions. The staff needs information for adaptation as they run into problems. Such information is about the *process* of implementation, rather than about characteristics of the innovation--the information usually supplied by federal technical assistance efforts.

Practitioners and policymakers alike often cite "money" as another missing resource preventing more effective educational performance. The issue is not whether federal funds are equitably distributed among districts, but the role of federal funding in stimulating educational change. Federal funds enabled many districts to adopt projects they would not have otherwise begun, as pointed out in Sec. III. The data also clearly indicate, however, that many school districts experienced considerable difficulties implementing and sustaining "soft" money projects. Their difficulties reflect local choices and conditions that go beyond the absence of start-up funds. Consequently, if federal policy is to become more effective, its funding strategies must affect school district behavior during the implementation and continuation phases of a project.

Technical assistance, the third missing resource, starts from a correct premise —school districts need help. However, the various federal programs generally have failed to provide relevant assistance or they have given the right assistance in the wrong way. For instance, some aid has been narrowly technical and overly detailed, usually because it tried to replicate success that occurred elsewhere. As a result, local project staff would either dismiss the assistance or find it unworkable. The underlying problem in this approach to technical assistance resembles difficulties encountered in the technocratic approach: The innovation is thought of as a *product* rather than as a *process* requiring adaptation.

A related problem concerns the way in which assistance has been given. For example, outside experts have often been hired with federal funds. However, our research shows that outside experts were typically ignored because their advice was too abstract, or their awareness of local problems was inadequate. Even when teachers saw them or other forms of outside assistance as relevant, the local staff tended to rely so heavily on these resources that they were unable to adapt the project to their own needs. In short, federally supported assistance efforts often were ineffective because they did not deal in an adaptive way with the concrete problems facing local staff. Insofar as assistance does not become an integrated component of the implementation process, it cannot achieve the educational improvement that federal planners anticipate.

3. *Improving educational performance requires a targeted project focus.* It has been assumed that reform can best be achieved by promoting projects of an experimental, trial, demonstration, or categorical nature. In light of the relatively low percentage of all school expenditures represented by federal funds, some policymakers believe that the federal government can maximize its leverage on the nation's school districts by concentrating federal aid on specific projects and spreading federal resources as widely as possible. The federal project focus is presumed to have three advantages: (1) The targets of categorical programs are more likely to benefit from the services, (2) project change of a narrow nature appears more feasible than systemic change in school districts, and (3) improvement in school performance is best accomplished by attacking each problem (equal

opportunity, reading, etc.) independently because problems of schooling consist of discrete, identifiable issues.

Both the "technocratic" and the "missing resource" approaches typically had a project focus. Thus, their own inadequacies obscured other serious difficulties implied by relying on projects as the prime or sole vehicle for change. The following discussion considers only effectively implemented projects and examines why the project approach usually did not satisfy federal goals.

First, many effectively implemented projects did not last long after the end of federal seed money. District officials often failed to make these projects part of the local system, thereby leaving the projects vulnerable to budget cuts, political pressures, and personnel turnover. The problem of sustaining change in educational practices ultimately depends on the willingness and capability of the school system, not simply on the project's resources or personnel.

The project focus also ignores the "loose-coupling" of school systems. Change in one aspect of schools or of schooling can occur without affecting other aspects. For example, projects providing remedial help in elementary school may have no effect on practices in junior high school, even though the targeted children are still disadvantaged and still underachieving. Similarly, projects dealing with one aspect of the curriculum may have little to do with other aspects. Moreover, a successful project in one school usually does not influence other practices in other schools. In short, many targeted projects are partial attacks on problems that require broader treatments, and a project focus can exacerbate the tendency for change to be isolated and thus more or less random within school districts.

Proponents of the project focus argue that a concentrated change effort economizes on personnel and resources (as well as providing an accountable and visible product). However, as Sec. V discusses, staff development activities and regular use of district specialists, which are essential to effective implementation and continuation, are most efficiently supplied where districts are able to service many projects. Few districts in our sample had seriously invested in staff development and specialists. They tended instead to dole out special project resources, which were usually inadequate to cover both the capital and continuing costs of staff development, or they sought outside funding, which seldom was available. Thus, federally funded projects created a demand for staff development, which neither the projects nor the districts supported adequately. The result often was ineffective project implementation and a short project life span.

These arguments do not imply that all targeted projects should be eliminated in favor of general aid or no aid at all. Categorical projects can serve an important political function in school districts, and noncategorical innovative projects can help stimulate grass-roots change. But they need to be buttressed by systemic or institutional-level assistance. Thus far, federal policy has done little to help develop the institutional capacities of school districts.

In summary, federal policy generally has followed one or more faulty assumptions implied by technocratic, missing resource, or project approaches. These misconceptions have resulted in policy guidelines and procedures that have largely failed to produce consistent educational improvement.

OPERATIONAL PREMISES FOR FEDERAL POLICY

Despite our criticisms of assumptions underlying past federal efforts, we recognize that the federal system of government imposes serious constraints on policymakers. These constraints are unlikely to be eliminated: Local decisions and conditions will continue to determine the manner of implementation—and thus the outcomes—of change efforts. The challenge for policymakers operating within these constraints is to take advantage of the leverage points in the existing educational system. As a first step, federal officials need to set aside the largely ineffective R&D point of view. Instead, they might consider an approach which assumes that school districts are ultimately responsible for improving their own performance, but require both short- and long-run aid to achieve this end. School districts need institutional assistance, but an *institutional development* strategy can work only if federal officials identify those aspects of the local change process and local organizational characteristics where federal resources and influence can be effective. The following premises might provide building-blocks to formulate this point of view.

1. *Educational performance could be improved if more attention were paid to all stages of the local change process.*

Federal policy has typically focused on providing incentives for the adoption of change efforts. Our research shows that contrary to technological assumptions, desired educational outcomes do not automatically flow from the initial adoption of change effort. Instead, effective projects go through three stages—*mobilization* (which includes adoption), *implementation*, and *institutionalization*. Mobilization is critical because unless school district planning takes a problem-solving approach and starts off by generating broad-based support, the change effort is likely to be half-hearted and short-lived. Implementation matters because educational outcomes ultimately depend on how local staff carry out change efforts in their schools and classrooms. Institutionalization, the stage when a change effort becomes a standard part of district operations, is pivotal because change efforts, even successful ones, tend to disappear. The federal influence on educational outcomes could be increased if federal policies could positively affect *all* these stages, not just the first. Although it would take us too far afield to recommend specific program changes, the following example provides a concrete illustration of how federal policies might affect all stages of the local change process.

Federal change agent programs generally award fixed-term grants regardless of the school district's ability to introduce and sustain the innovations they propose. Rather than these blanket awards, grants could be awarded according to whether a school district is initiating a new project, implementing an already planned project design, or incorporating a project that the district has successfully implemented on a limited, trial basis.

More specifically, three types of grants could be awarded—a planning grant of one year's duration, an implementation grant of two to three years' duration, and an incorporation grant of two years' duration. New projects would be started with a one-year grant, with two aims: to allow districts to produce a proposal that satisfied guidelines (e.g., problem identification, needs assessment, and personnel assignment); and to support a district planning process that encouraged participation from different levels in the district. If a school district sought a follow-on grant, it would be required to show that its planning process involved broad participation.

The project implementation award would pay districts for up to three years to carry out new educational practices. Although this grant would be similar, for example, to the present Title IV-C award, it would have been preceded by the planning grant, which would allow SEA personnel to help LEAs in planning for project implementation. Our research has shown that the strategies chosen to implement a project can be pivotal for the project's success; SEA personnel could provide useful advice on appropriate strategies, adapted to local needs.

The need for a project incorporation grant of up to two years arises because school districts often cannot afford to sustain or spread successful innovations after federal funding ends. Furthermore, unless the school district is committed to make the new educational practice a standard part of district operations, the project will eventually fade away, regardless of its past success or staff interest. To help insure the district's commitment, federal guidelines might require (a) matching grants from LEAs and/or (b) on-site visits of SEA personnel before awarding an incorporation grant. These visits might enable states to evaluate district plans and capabilities to sustain an innovation, as well as allowing SEA personnel to offer advice.[2]

2. *Educational performance could be improved with adaptive implementation assistance.*

School districts need assistance to implement change efforts effectively; however, such assistance should not rely on technology, resources, and projects. Instead, assistance should foster the adaptation of change efforts to local conditions. The characteristics of adaptive assistance, as discussed in Sec. V, are:

- *System focused*—the local school district, not the individual teacher, school, or project alone, should be the "target" of implementation assistance; assistance should focus on the management of change, not simply on discrete problems such as reading scores.
- *Continuity*—assistance should be offered on an ongoing basis.
- *Practitioner-based*—local or regional resource personnel should provide assistance.
- *Process-oriented*—assistance should support local efforts to identify and carry out solutions, rather than import external solutions; it should encourage opportunities for local personnel to "learn-by-doing."

The Office of Education has generally not provided technical assistance directly to local school districts. The federal role has been indirect, through support of regional laboratories and centers, of technical assistance components in local grant applications, and of the activities of the National Diffusion Network. Among these networks, the work of the National Diffusion Network comes closest to realizing the goals of adaptive implementation assistance.[3] However, we believe much more could be done without massive federal funding.

One possibility that educators often suggest is a network of assistance centers staffed by practitioners on leave from consortia of districts in relatively small

[2] For a more detailed discussion, see P. Berman, *Congressional Testimony on Educational Innovations*, The Rand Corporation, P-5983, August 1977; and P. Berman and M. W. McLaughlin, *Rethinking the Federal Role in Education*, The Rand Corporation, P-6114, May 1978.

[3] See John A. Emrick, *Evaluation of the National Diffusion Network*, Stanford Research Institute, Menlo Park, California, 1977.

geographic areas.[4] Although these centers might provide a good way to offer comprehensive, continuing, practitioner-based, and process-oriented assistance, many questions need to be answered before a full-scale federal effort should be launched: How should these implementation assistance centers relate to existing institutional arrangements (e.g., the Regional R&D Labs and Centers or the National Diffusion Network)? How should they be financed (e.g., should they be essentially self-supporting and sell their services to member districts or should they be supported by a partnership of federal, state, and local resources)? What should be the federal and state roles in regulating their activities? In light of these questions, the wisest course for federal policy at this time might be (1) to gather systematic data from the variety of existing state and federal efforts, and (2) to fund several small-scale pilot efforts to understand better how adaptive implementation assistance could be effectively delivered.

3. *Educational performance could be improved if the capacity of school districts to manage change were enhanced.*

We believe that supplemental aid aimed at developing the institutional capacity of school districts to manage change could have a high payoff. The inability of many LEAs to mobilize, implement, and sustain change efforts ultimately frustrates many objectives of targeted federal and state programs, as we discussed previously. With better capacity to deal with the wide and growing spectrum of demands they face, districts may be better able to respond to specific federal initiatives in an effective way.

A major opportunity for federal policy to improve the institutional capacity of school districts lies in the largely ignored area of local staff development. Our research indicates that staff development can be most important in facilitating lasting change. For example, many teachers become *less* effective in their classrooms as their length of tenure in the district increases. The average teacher is most productive from approximately the third to the sixth year of teaching. After that point, both the "best" teachers and the average ones seem to level off in effectiveness. This implies that teachers need a new kind of professional development experience after five to seven years of teaching to encourage productivity and growth.

Moreover, the success of any practice depends less on the inherent merit of the technology than it does on the skills and commitment of the user. Yet, teachers often have been inadequately trained to deal with innovative teaching approaches. Indeed, it has become apparent that the architects of most federal change agent programs have seriously underestimated how much teacher training or retraining was necessary for successful program implementation. For example, lack of appropriately trained teachers has been a major stumbling block in programs such as the Title VII bilingual projects or Title I projects for the disadvantaged. In addition, such programs as Career Education, Right-to-Read, and Title III (now Title IV-C) have suffered from inadequate teacher training components. As a result, many federally funded projects have been less effective than planners hoped—not because of resistance, inadequate funding, or inadequate materials, but because staff were not trained to implement the new procedures or to sustain them once federal funding ended.

In short, our research indicates that local staff development activities could

significantly improve the effectiveness of teachers and the implementation of local reform efforts. The federal government could take the lead in staff development because (a) staff development programs offered by most districts rarely meet teachers' and administrators' needs and, in fact, have sometimes been counterproductive; (b) staff development will probably receive short shrift from school districts in a time of declining enrollments and consequent fiscal pressure.[5]

Of the many ways for the federal government to support local staff development, we favor a new and distinct federal program that would offer financial support for staff training and renewal activities. The program should aim for the local development of the district capacity to service its staff for a wide variety of needs.[6]

Establishing a new program would be difficult because additional federal resources might be required—a condition that Congress and the President may be unwilling to meet. But a single federal program would have several advantages. First, a separate categorical effort would provide a clear signal to state and local school personnel about federal priorities: it would imply that the federal government considers local capacity building to be a fundamental need. Second, a federal program for local staff development could help integrate staff development concerns with USOE. Third, although the proposed program would best be administered by the states, following federal guidelines, federal funding would more likely provide a stable, and perhaps more equitable, allocation of resources than individual state programs. School district experience with staff development has progressed to the point that federal guidelines could be based on relatively effective models.[7]

TOWARD A NEW FEDERAL ROLE

The recommendations sketched above are merely illustrations, not empirical findings. However, they, and more importantly the premises upon which they are based, direct attention to areas that federal policy has often neglected or placed in

[4] For an extensive discussion of assistance centers, see *Rethinking the Federal Role in Education.*

[5] See P. Berman and M. W. McLaughlin, "The Management of Decline," in Susan Abramowitz and Stuart Rosenfeld (eds.), *Declining Enrollments: The Challenge of the Coming Decade*, National Institute of Education, U.S. Department of Health, Education, and Welfare, Washington, D.C., March 1978. The expected cut in staff development is ironic because decline in student enrollment has forced many districts to reduce the size of their teaching and administrative staffs. As a result, cut in staff development is ironic because decline in student district staffing has become relatively stable, and districts can no longer rely on "new hires" to impart fresh ideas and vitality. The resulting rise in the overall numbers of tenured staff is likely to depress the quality of district educational services.

[6] For a discussion of this recommendation and other policy options, see *Rethinking the Federal Role in Education.* The proposed program emphasizes the development of school districts' capacity to deliver staff development, rather than supporting the extensive use of teacher training institutions or schools of education in local staff development programs. These traditional sources of staff development have not been included because local practitioners almost universally believe that teacher training institutions presently offer neither relevant nor opportune services. Accordingly, teacher training institutions or schools of education should be included in local staff development activities only at the discretion of local practitioners. If school districts elected to use their funds to purchase outside assistance, their purchasing power might provide a strong incentive for teacher training institutions to reexamine their present practices and make changes in their mode of operation that would enable them to work more effectively with districts.

[7] For staff development principles, see *Rethinking the Federal Role in Education*, and M. W. McLaughlin and P. Berman, "The Art of Retooling Educational Staff Development in a Period of Retrenchment," *Educational Leadership*, December 1977.

a secondary role. For example, they suggest that local adoption of projects should not be the sole federal policy focus; that federal efforts to improve the change process within school districts should take precedence over their past concern with improving educational products; that federal evaluators should expect and encourage the adaptation of programs to suit local needs; that the federal government should promote local institutional development in addition to more targeted project approaches; and that federal legislation should establish ways to provide more differentiated and flexible support to school districts. In short, these premises suggest a shift in the federal role toward the *process* of educational change, which might well imply a strengthened role for state education agencies.

State departments of education are necessary partners to the federal government. Both legal requirements and practicality dictate a major role for SEAs in interpreting federal intent, monitoring local projects, and providing guidance and assistance. Despite this potentially major role, SEAs have often been seen as the weak link in the federal-state-local chain of policy implementation. Furthermore, federal policy has only rarely been concerned with strengthening the capacity of the state agency (e.g., ESEA, Title V). Instead, most federal policies have addressed the role of the states only incidentally (e.g., ESEA Title I), or have bypassed it altogether (e.g., ESEA Title VII, ESAA, and ESEA Title III, Sec. 306). This federal tendency to minimize the state role has been motivated in part by federal impatience for "results," and the concomitant perception that SEA involvement would impair local program implementation. In the short run, this may be true. But in the long run, we believe that any significant increase in the general effectiveness of federal education policy will depend on how much guidance and support SEAs can furnish their local districts. Specifically, we believe that federal policy should be based on the principle that SEAs are best suited to influence and to provide opportune assistance to school districts. Despite significant weaknesses among SEAs, they, rather than federal agencies, have the potential to supply support and assistance of the type implied by the preceding premises about school district behavior.

Although this recommendation supports the recent federal policy toward greater reliance on states, it implies a significantly stronger role for SEAs than that presently contemplated in federal legislation. Indeed, taken together with our premises about school district behavior, it suggests a basic reorientation of federal policy.

These principles imply a flexible federal role that aims to facilitate local change efforts, rather than control them. The long-term goal would be to reach a point where an increasing number of school districts develop the institutional capacity to improve their own performance. Thus, ideally, direct federal assistance could eventually diminish, and federal leadership would consist of setting national priorities and strengthening the natural linkages among school districts and between districts and SEAs.

State activity also would have to be more flexible and responsive to local needs and conditions than it has been. Indeed, the ability of the states to nurture local district development will be a key to long-term prospects for educational improvement. Despite the strides that states have made over the past decade, few SEAs are now capable of handling such a demanding role. It would thus appear that federal educational policy should aim to strengthen the administrative capacity of SEAs, yet not make them federal agents within an unreceptive state government. Strong-

er state agencies would undoubtedly pose a challenge to the authority of federal administration. However, federal leadership would be based on fostering interdependent—rather than either autonomous or hierarchical—relationships among federal, state, and local levels so that the inevitable bargaining and conflict among these actors could be conducted within a cooperative framework.